DOCKETED	
Docket Stamp Updated:	5/28/2025 1:51:43 PM
Docket Number:	25-OPT-01
Project Title:	Viracocha Hill Battery Energy Storage System Project
TN #:	261781
Document Title:	Volume 1 Viracocha Hill BESS Opt In Application
Description:	Volume 1 Viracocha Hill BESS Opt In Application
Filer:	Sarah Madams
Organization:	Jacobs
Submitter Role:	Applicant Consultant
Submission Date:	2/14/2025 2:23:59 PM
Docketed Date:	2/14/2025

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Submission Date:	2/14/2025 2:22:09 PM
Docketed Date:	2/14/2025

Volume 1

Viracocha Hill Battery Energy Storage System AB-205 Opt-In Application

Submitted by:

Reclaimed Wind LLC

February 2025

Technical Assistance by:

Jacobs

Revision: 0

Contents

Acronyms

ABAG	Association of Bay Area Governments
ACCDA	Alameda County Community Development Agency
ACDEH	Alameda County Department of Environmental Health
ACE	Altamont Corridor Express
ACFC	Alameda County Fire Code
ACFD	Alameda County Fire Department
ACGP	Alameda County General Plan
ACSR	Aluminum Conductor Steel Reinforced
ADT	average daily traffic
AHJ	authority having jurisdiction
ALS	Advanced Life Support
AMSL	above mean sea level
APN	Assessor’s Parcel Number
Applicant	Reclaimed Wind, LLC
APWRA	Altamont Pass Wind Resource Area
ARMR	Archeological Resource Management Report
ASA	Alternative Substation Area
AST	aboveground storage tank
BCE	before common era
BESS	battery energy storage system
BLM	Bureau of Land Management
BMP	best management practice
BOL	Beginning of Life
BOS	Board of Supervisors
CAES	Compressed Air Energy Storage
CAISO	California Independent System Operator
Cal/OSHA	California Division of Occupational Safety and Health
CalGEM	California Geologic Energy Management
Caltrans	California Department of Transportation
CBC	California Building Code
CBO	Chief Building Officer

CBP	Community Benefits Plan
CBSC	California Building Standards Commission
CCAP	Community Climate Action Plan
CCR	California Code of Regulations
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERS	California Environmental Reporting System
CFC	California Fire Code
CFR	Code of Federal Regulations
CGC	California Government Code
CGS	California Geological Survey
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CIWMA	California Integrated Waste Management Act
CMIM	computerized maintenance/inventory management
CMP	Congestion Management Program
CPM	Compliance Project Manager
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRS	Community Rating System
CRS	Cultural Resources Specialist
CRTR	Cultural Resources Technical Report
CTC	Alameda County Transportation Commission
CTG	Controlled Techniques Guidance
CUPA	Certified Unified Program Agency
CVC	California Vehicle Code
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
CWC	California Water Code
DCS	Distributed Control System
DESCP	drainage, erosion, and sediment control plan
DOC	Department of Conservation

DOT	U.S. Department of Transportation
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EBRPD	East Bay Regional Park District
ECAP	East County Area Plan
EFZ	Earthquake Fault Zone
EIR	environmental impact report
EMF	electric and magnetic fields
EMT	emergency medical technician
EOL	End of Life
EOP	Emergency Operations Plan
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
ERP	Emergency Response Plan
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHSZ	fire hazard severity zone
FMMP	Farmland Mapping and Monitoring Program
FRA	Federal Responsibility Areas
FRAP	Fire and Resource Assessment Program
GHG	greenhouse gas
GLO	General Land Office
GO	General Order
HAZMAT	Hazardous Materials
HFTD	High Fire Threat District
HMBP	Hazardous Materials Business Plan
HMDB	Historic Marker Data Base
HSP	Health and Safety Plan
HV	high voltage
HVAC	heating, ventilation, and air conditioning
HWCL	Hazardous Waste Control Law
IBMI	Ione Band of Miwok Indians

IFC	International Fire Code
IOU	investor-owned utilities
ISO	Insurance Services Office
kV	kilovolt
LARPD	Livermore Area Recreation and Park District
LAVTA	Livermore Amador Valley Transit Authority
LHMP	Local Hazard Mitigation Plan
LORS	laws, ordinances, regulations, and standards
LOS	level of service
LPA	Large Parcel Agriculture
LRA	Local Responsibility Area
MMA	Material Modification Assessment
MRR	Modification Request Report
MRZ	mineral resource zone
MTC	Metropolitan Transportation Commission
MV	medium voltage
MW	Megawatt
MW-hr	Megawatt hour(s)
NAHC	Native American Heritage Commission
NEC	National Electric Code
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NETR	Nationwide Environmental Title Research
NFPA	National Fire Prevention Association
NHD	National Hydrography Dataset
NHMLA	Natural History Museum of Los Angeles
NHPA	National Historical Preservation Act
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
NWS	National Weather Service
O&M	operations and maintenance

OES	Office of Emergency Services
OHP	Office of Historic Preservation
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PCE	passenger car equivalents
PCO	Point of Change of Ownership
PeMS	Performance Measurement System
PG&E	Pacific Gas and Electric
POI	Point of Interconnection
PPE	Personal Protective Equipment
PRC	Public Resources Code
PRM	Paleontological Resources Monitor
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
Project	Viracocha Hill Battery Energy Storage System Project
PRR	Paleontological Resources Report
PRS	Paleontological Resource Specialist
PSD	
PUC	Public Utilities Code
RAWS	Remote Automated Weather Station
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Conditions
ROW	right-of-way
ROWD	Report of Waste Discharge
RPS	Renewables Portfolio Standard
RWQCB	Regional Water Quality Control Board
S&HC	California Streets and Highways Code
SHPO	State Historic Preservation Officer
SMARA	Surface Mining and Reclamation Act
SPCC Plan	Spill Prevention Control and Countermeasures Plan
SRA	State Responsibility Area
SSJCFA	South San Joaquin County Fire Authority
SVP	Society of Vertebrate Paleontology
SWIS	Solid Waste Information System

SWMP	Stormwater Management Plan
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCP	Traditional Cultural Property
TDS	total dissolved solids
TMDL	total maximum daily loads
TMP	Transportation Management Plan
TSDF	Treatment, Storage, and Disposal Facility
UCMP	University of California, Berkeley, Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
Viracocha Hill BESS	Viracocha Hill Battery Energy Storage System
VMT	vehicle mile traveled
WDR	Waste Discharge Requirements
WEAP	Worker Environmental Awareness Program
WRCC	Western Regional Climate Center

1. Executive Summary

Reclaimed Wind, LLC (the Applicant), proposes to construct, own, operate, and eventually repower or decommission the 90.7-MW (at the Point of Interconnection – POI) Viracocha Hill Battery Energy Storage System Project (Viracocha Hill BESS or Project) in Alameda County, California, adjacent to the proposed Sand Hill Wind Repower Project (to be constructed, owned, and operated by an affiliate of the Applicant). The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, which will include a 362.8 megawatt-hour (MWh) BESS facility, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

The Project will provide an efficient method for meeting power needs in California by providing firm, clean power from renewable sources amongst others. The Project design applies known equipment for a planned operational life of 30 years.

1.1 Project Objectives

The primary purpose of the Project is to assist the State of California (State) in meeting the goal of all electricity in California to come from renewable and zero carbon resources by 2045 as required under Senate Bill 100 (2018). To achieve this goal, new power supplies and power storage are needed. The Project would help balance electricity generation from all sources, including, but not limited to, wind and solar, with electricity demand by storing excess generation from all power sources and delivering back to the grid when demand exceeds real-time generation supply. The Project displaces the need for additional fossil fuel-based generating stations to serve peak demand periods when renewable sources may be inadequate or unavailable. The Project objectives are as follows:

1. Construct and operate a 362.8-MW-hr and 90.7-MW BESS facility at the POI to support the State's goals.
2. Develop a BESS facility that minimizes significant environmental impacts of project development through the use of existing infrastructure, existing real property interests and rights-of-way, project design measures, and feasible mitigation measures.
3. Develop a BESS facility close to a utility grid-connected substation with existing capacity or available space nearby for interconnection.
4. Develop an eligible energy storage facility that can assist community choice aggregators, investor-owned utilities, and publicly owned utilities in meeting their California Renewables Portfolio Standard (RPS) requirements.
5. Develop a Community Benefits Plan (CBP) that ensures the proposed Project benefits the local community and contributes to a clean and equitable economy for construction materials.
6. Create new, high-paying construction jobs and skilled trades and professional roles in Alameda County.

1.2 Project Location

The Project will be located on approximately 17 acres (BESS equipment yard) of an approximately 443-acre parcel (APN 99B-7300-1-5) (Township 2 South, Range 3 East, Section 11, SW 1/4 of SW 1/4) in Alameda County. The Viracocha Hill BESS equipment yard includes laydown and parking yards.

The Project site is located in eastern Alameda County in the Altamont Pass Wind Resource Area (APWRA). The Project is located approximately 0.8 mile south of the Bethany Reservoir, 0.15 mile north of Altamont Pass Road, and 3.3 miles west of miles west of the city limits of Tracy, as shown on Figure 1-1. The surrounding area consists of grazing land and wind power production. A rendering of the Project site prior to construction is shown on Figure 1-2, and an architectural rendering is provided as Figure 1-3. A list of the owners of property within 1,000 feet of the Project and 500 feet of Project linears is provided in Appendix 1A. A list of preparers is provided as Appendix 1B. A list of agency contacts is provided as Appendix 1C, and a list of permits is provided as Appendix 1D.

1.3 Project Elements

The main Project features, including the BESS yard, onsite substation, access road, road improvements, alternative substation, Ralph substation and the gen-tie is shown in Figure 1-4. The Project will include the following elements, as discussed in Section 2.0, Project Description.

- Battery units, Tesla Megapack 2XL or similar
- Medium voltage transformers
- Emergency diesel fire water pump
- Emergency diesel generator
- Fire water tank
- Operations and maintenance (O&M) Pad
- Auxiliary equipment pad
- Construction laydown
- Onsite substation

1.4 Project Benefits

The Viracocha Hill BESS will provide the following key environmental and economic benefits:

- **Baseload Renewable Portfolio Standard Resource:** The Project is a key tool to assist California's Renewable Portfolio Standard (RPS) requirements and help fulfill the long-term needs of California and goals of Senate Bill (SB) 100. The Project will be available to receive or deliver energy 24 hours a day and 365 days per year, allowing for the injection of energy into the grid to be shifted during pivotal moments when demand exceeds real-time generation supply.
- **Reliability Support for the California Grid:** As RPS goals increase, a larger portion of the power mix will be supplied by intermittent and weather-dependent resources; firm clean power will become a critical piece of the power mix. The Project will support these resources, providing energy storage to the California grid.
- **Local Economic Benefits:** Once operating, the Project will not significantly impact local housing, educational, or emergency response resources. A community benefits package describing these items will be provided at a later date.

1.5 Project Ownership

The Applicant will construct, own, and operate the Project.

Legend

- Proposed 230-kV Gen-Tie
- Proposed Access Road Widening Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- BESS Parcel (APN 99B-7300-1-5)
- Wind Farm Road (No Improvements)
- Interstate

Source:
1) ESRI Aerial Images

N

0 2 4
Miles

Figure 1-1
Project Vicinity
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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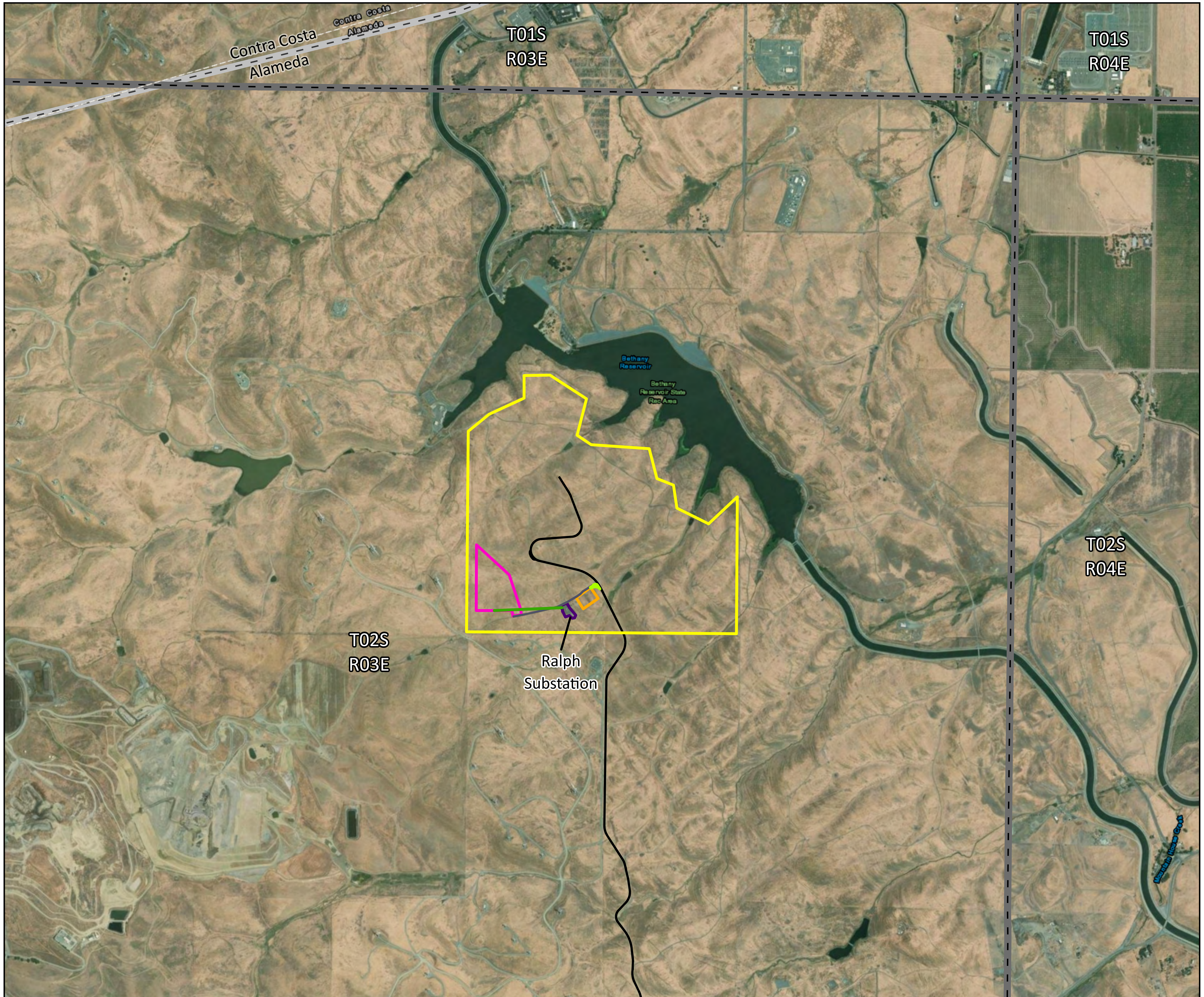
Figure 1-2
Project Site Before Construction
Viracocha Hill BESS Project
Alameda County, California

Jacobs

Figure 1-3
Architectural Rendering
Viracocha Hill BESS Project
Alameda County, California

Jacobs



Legend

- Proposed 230-kV Gen-Tie
- Proposed Access Road Widening Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- BESS Parcel (APN 99B-7300-1-5)
- Wind Farm Road (No Improvements)
- County
- Public Land Survey System (PLSS) Township and Range

Source:
1) ESRI Aerial Images

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0 0.5 1
Miles

Figure 1-4
Project Features
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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1.6 Queue Position

The Project entered the California Independent System Operator (CAISO) queue on April 16, 2018, with a queue position of 1461.

1.7 Project Schedule

The Applicant is filing this Opt-In Application under the CEC's AB 205 licensing process for battery storage projects located on a site capable of providing energy storage. Construction of the Project is expected to begin no later than the second quarter of 2026, and full-scale commercial operation is expected to begin by the third quarter of 2027.

1.8 Environmental Considerations

Pursuant to the requirements set forth in existing environmental laws and the CEC's regulations, 10 of 18 areas of possible environmental impact from the Project have been investigated in this submittal. Detailed descriptions and analyses of these areas are presented in this Application.

In an effort to support the CEC Staff's review of the Application package, the following sections will be submitted at a later date and have not been included within this filing.

- 4.0 Mandatory Opt-In
- 5.1 Air Quality
- 5.2 Biological Resources
- 5.7 Noise
- 5.9 Public Health
- 5.11 Socioeconomics
- 5.13 Visual Resources

As discussed in detail in this Application, with the implementation of the proposed mitigation measures and the anticipated Conditions of Certification, there will be no significant unmitigated environmental impacts associated with the construction and operation of the Project.

1.9 Conclusion

The Project will provide reliable energy storage to meet California's goals, enhance the local economy, create jobs, and have no significant adverse impacts on the local environment. Accordingly, the Project is in the public interest and should be expeditiously permitted.

2. Project Description

Reclaimed Wind LLC (the Applicant) proposes to construct, own, operate and eventually repower or decommission the 90.7 MW (at the Point of Interconnection, POI) Viracocha Hill Battery Energy Storage System Project (Viracocha Hill BESS or Project) in Alameda County, California, adjacent to the proposed Sand Hill Wind Repower Project (to be constructed, owned, and operated by an affiliate of the Applicant) as shown on Figure 1-1. The Project includes a fenced BESS yard which will include a 362.8 megawatt-hour (MWh) BESS facility, improvements to an existing access road, Project substation and a new proposed gen-tie line. If expanding the existing Ralph Substation is not feasible, a new switching station or a line-tap located adjacent to the Ralph Substation would be included as part of the project.

2.1 Project Objectives

The primary purpose of the Project is to assist the State of California (State) in meeting the goal of all electricity in California to come from renewable and zero carbon resources by 2045 as required under Senate Bill 100 (2018). To achieve this goal, new power supplies and power storage are needed. The Project would help balance electricity generation from all sources, including, but not limited to, wind and solar, with electricity demand by storing excess generation from all power sources and delivering back to the grid when demand exceeds real-time generation supply. The Project displaces the need for additional fossil fuel-based generating stations to serve peak demand periods when renewable sources may be inadequate or unavailable. The Project objectives are as follows:

1. Construct and operate an up to approximately 362.8-MW-hr and 90.7 MW BESS facility at the POI to support the state's energy goals.
2. Develop a BESS facility that minimizes significant environmental impacts of project development through the use of existing infrastructure, existing real property interests and rights-of-way, project design measures, and feasible mitigation measures.
3. Develop a BESS facility in close proximity to a utility grid-connected substation with existing capacity available for interconnection.
4. Develop an eligible energy storage facility that can assist community choice aggregators, investor-owned utilities, and publicly owned utilities in meeting their California Renewables Portfolio Standard (RPS) requirements.
5. Develop a Community Benefits Plan (CBP) that ensures the proposed project benefits the local community and contributes to a clean and equitable economy for construction materials.
6. Create new, high-paying construction jobs and skilled trades and professional roles in Alameda County, California.

2.2 Facility Description and Location

The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

The Project anticipates providing storage of energy for California's electric markets, supporting the state's pursuit of an environmentally clean and reliable electrical system.

The location and the configuration of the Project have been selected to reduce curtailment for solar and wind projects during the period from 9 am to 5 pm, locally and at the system level. A Modification Request Report (provided as Appendix 3A under a request for confidentiality) concluded that Pacific Gas and Electric (PG&E) network (transmission) upgrades are required to receive the stored energy from the Ralph Substation. Viracocha Hill BESS PG&E's network upgrades will support sustainable operation of PG&E's system and further projects not affiliated with the Project. PG&E will construct and complete the network updates prior to Project operation.

2.2.1 Facility Description

2.2.1.1 Site Access

The Viracocha Hill BESS site can be accessed via Interstate 580 (I-580), West Grant Line Road, and Altamont Pass Road. There is a locked gate entrance from Altamont Pass Road, and once onsite, the Project can then be accessed via approximately 2.3 miles of unpaved access roads currently in use to access the Ralph Substation and the Sand Hill Wind Repower Project.

2.2.1.2 Site Location

The Project site is located in eastern Alameda County within the Altamont Pass Wind Resource Area (APWRA). It is located in a region of Alameda County characterized mostly by grazing and wind power production, with more recent additions of proposed BESS facilities. The area surrounding the Viracocha Hill BESS site is primarily grazing land.

The Project is located approximately 0.8 mile south of the Bethany Reservoir, 0.15 miles north of Altamont Pass Road, and 3.3 miles west of miles west of the city limits of Tracy, California.

The Project will be located within an approximately 443-acre parcel (APN 99B-7300-1-5) (Township 2 South, Range 3 East, Section 11, SW 1/4 of SW 1/4) within Alameda County, California. Viracocha Hill BESS

The location and configuration of the Viracocha Hill BESS was selected to most effectively and efficiently support the adjacent Sand Hill Wind Repower Project and associated infrastructure.

2.2.1.3 Site Layout

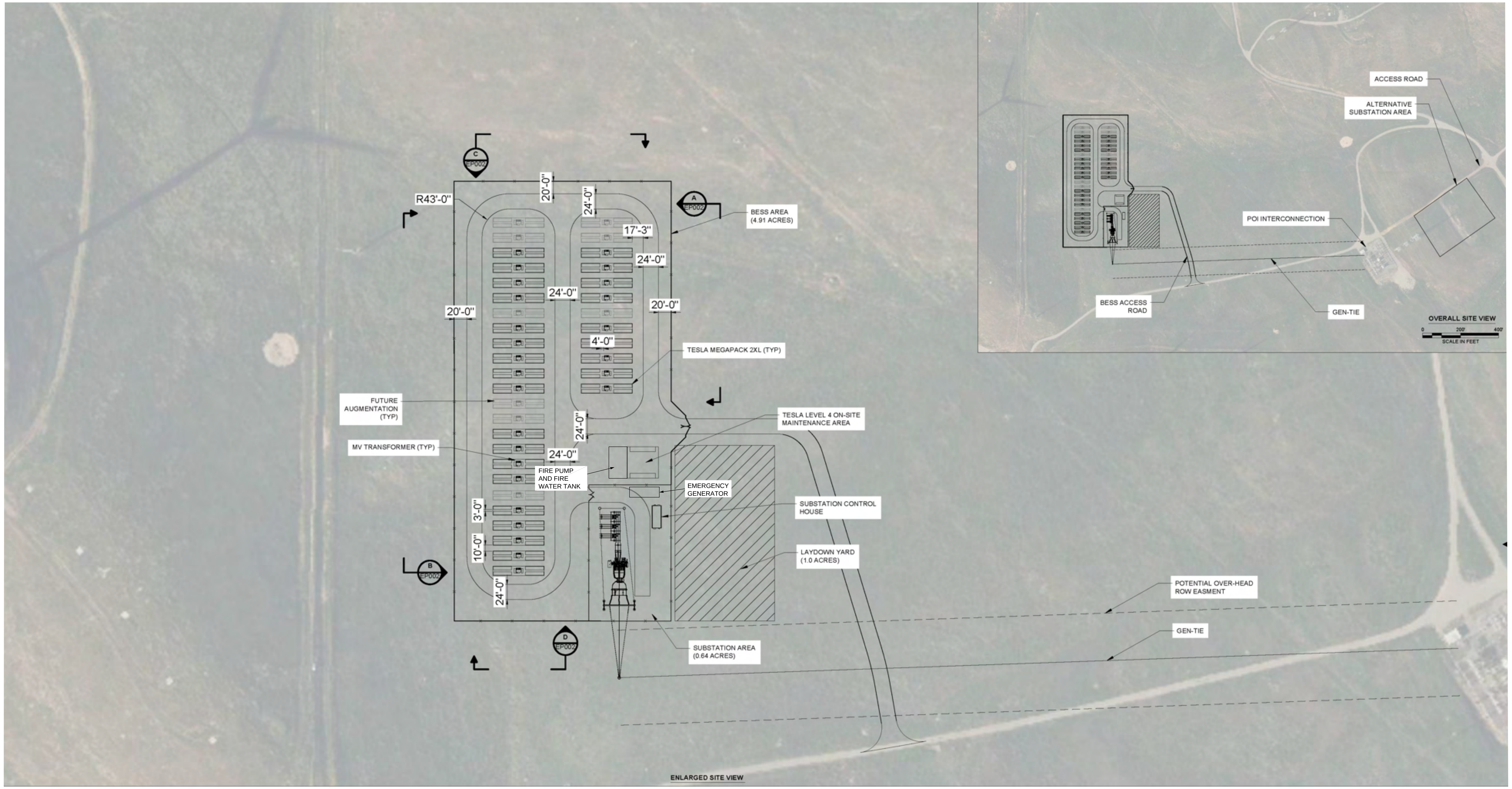
The Viracocha Hill BESS general arrangement drawing is shown on Figure 2-1. Elevation drawings of the Project are shown on Figure 2-2. The Viracocha Hill BESS will include the following elements:

- Battery units, Tesla Megapack 2XL or similar
- Medium Voltage Transformer
- Emergency Diesel Fire Water Pump
- Emergency Diesel Generator
- Fire Water Tank
- Operations and Maintenance (O&M) Pad
- Auxiliary Equipment Pad
- Onsite substation

2.2.1.4 Project Components

2.2.1.4.1 Battery Units

The project will consist of up to 108 Tesla Megapack 2XL, or similar, at Beginning of Life (BOL), which will follow an augmentation schedule increasing the number of Tesla Megapack 2XL to 144 at the End of Life (EOL). Augmentation for a BESS involves adding new battery modules or upgrading equipment to maintain or increase the system's energy or power capacity over time. This process addresses battery degradation and ensures the system meets performance requirements.



ENERGY STORAGE SYSTEM DESCRIPTION	
NAMEPLATE AT POI +/- 0.95PF	90.70 MW / 362.80 MWh

MATERIAL LIST	
NUMBER OF TESLA MEGAPACK 2XL (BOL)	108
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (BOL)	27
NUMBER OF TESLA MEGAPACK 2XL (EOL)	144
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (EOL)	36

LEGEND:

- FENCE
- SETBACK
- GATE
- TESLA MEGAPACK 2XL
- MEDIUM VOLTAGE TRANSFORMER

ABBREVIATION LIST:

BESS - BATTERY ENERGY STORAGE SYSTEM
BOL - BEGINNING OF LIFE
EOL - END OF LIFE
POI - POINT OF INTERCONNECTION
TYP - TYPICAL

NOTES:

1. FINAL LAYOUT SUBJECT TO CHANGE BASED ON FINAL ENVIRONMENTAL, CIVIL, GEOTECHNICAL, AND AUTHORITY HAVING JURISDICTION REQUIREMENTS.
2. EQUIPMENT QUANTITIES, CONFIGURATION, AND FOOTPRINT SUBJECT TO CHANGE BASED ON FINAL BESS TECHNOLOGY SELECTION AND ADDITIONAL PROJECT DUE DILIGENCE.
3. PARKING, TRAILERS, AND OTHER FACILITIES NOT CONSIDERED IN DEVELOPMENT OF EQUIPMENT ARRANGEMENT SHOWN.
4. WATER SUPPLY, SUCH AS TANKS, FIRE WATER LOOP, AND/OR HYDRANTS NOT INCLUDED OR CONSIDERED IN LAYOUT DEVELOPMENT.
5. WETLANDS, FLOODPLAINS, AND OTHER ENVIRONMENTAL CONSTRAINTS NOT CONSIDERED IN LAYOUT DEVELOPMENT.
6. EOL QUANTITIES ARE PRELIMINARY. FINAL EOL QUANTITIES AND AUGMENTATION SCHEDULE TO BE CONFIRMED UPON RECEIPT OF 25 YEAR DEGRADATION VALUES.
7. TESLA ON-SITE MAINTENANCE AREA ACCOUNTS FOR (2) 40 FT STORAGE CONTAINERS AND A SERVICE STAGING ZONE PER DOCUMENT, "APPLICATION NOTE: ON-SITE MAINTENANCE INFRASTRUCTURE REQUIREMENTS REVISION 1.6".
8. MEDIUM VOLTAGE CONCEPTUAL TRENCHING DISTANCE OF 1930 FT IS BASED ON (6) MEDIUM VOLTAGE HOMERUN CABLES WITH AN APPROXIMATE SPACING OF 5 FT BETWEEN CABLES. PER THE CEC 2022 A MINIMUM OF 36" OF COVERAGE IS REQUIRED FROM TOP OF CABLE TO TOP OF FINISHED GRADE FOR MEDIUM VOLTAGE 34.5 KV DIRECT-BURIED CABLES. TRENCH DISTANCE, SPACING, AND BURIAL DEPTH ARE SUBJECT TO CHANGE.
9. EQUIPMENT DIMENSIONS ARE APPROXIMATE AND ARE SUBJECT TO CHANGE.
10. ALL SPACE ALLOCATED FOR FUTURE AUGMENTATION IS ANNOTATED IN GRAY.

NORTH

SCALE IN FEET

02/10/2025

FOR PERMITTING PURPOSES ONLY

Figure 2-1
General Arrangement
Viracocha Hill BESS Project
Alameda County, California

Source: BURNS & MCDONNELL 177321_SALKA_ENERGY_VIRACOCHA_HILL_BE EP001.DWG

Jacobs

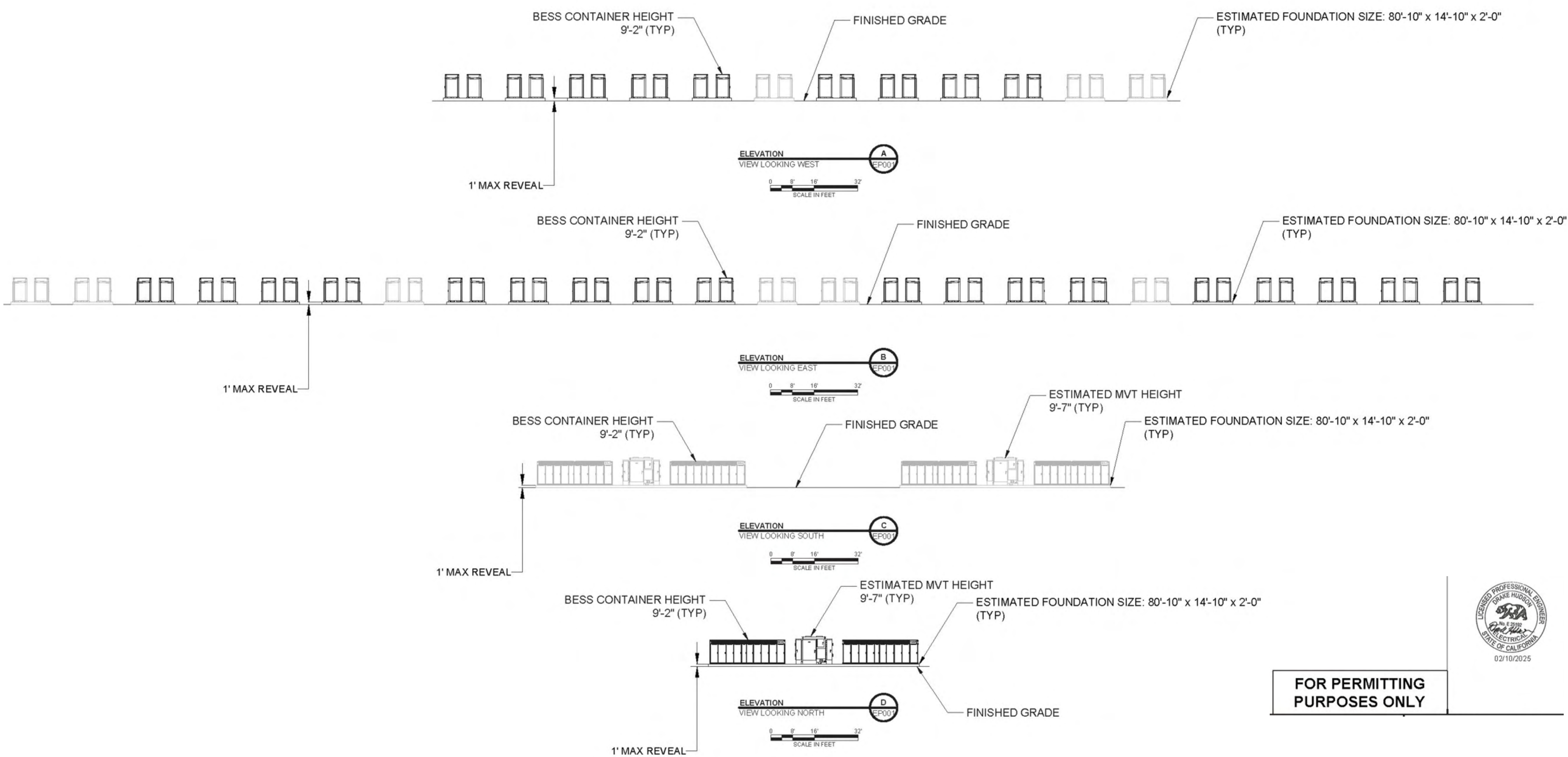


Figure 2-2
Equipment Elevation Plan
Viracocha Hill BESS Project
Alameda County, California

Jacobs

Source: BURNS & MCDONNELL 177321_SALKA_ENERGY_VIRACOCHA_HILL_BE EP002.DWG

Each Tesla Megapack 2XL is rated for a maximum power capability of 979 kW with a maximum energy capacity of 3,916 kWh per Megapack in a 4-hour configuration.

This will result in a total installed power of 90.70 MW at POI with up to 362.8 MW-hr at BOL.

2.2.1.4.2 Medium Voltage Transformer

The project will include up to 27 medium voltage transformers with capacity of up to 36.

2.2.1.4.3 Fire Water Pump and Tank

In the event of fire at the Project, one up to 260 horsepower (hp) fire pump will be included. The Fire Water Pump will receive water from an approximately 28,000-gallon freshwater tank. The tank will be sited near the Fire Water Pump. Prior to operations, approximately 28,000 gallons of water for the fire water tank will be trucked in via tanker trucks. Water will come from local sources including local irrigation districts and recycled water sources. The tank will be topped off as needed.

2.2.1.4.4 Standby Emergency Power

In case of a total loss of power, or in a situation when the utility system is out of service, the emergency electrical power for the facility will be supplied by one standby diesel engine driven emergency generator with an output of up to 1,000 horsepower.

2.2.1.4.5 O&M Pad and Auxiliary Equipment Pad

O&M Pad and Auxiliary Equipment Pads will be used for the storage and staging of all necessary materials and equipment for the operation and maintenance of the facility, as well as for the temporary storage or placement of auxiliary equipment.

2.2.1.4.6 Onsite Substation

The onsite substation will consist of all the equipment required to collect, step-up the voltage, and connect to the grid the energy generated by the BESS facility. This includes the following equipment:

- Main power transformer
- Medium voltage (MV) switches and/or breakers
- High voltage (HV) switches and/or breakers.
- Current transformers (IT) and voltage transformers (TT)
- Metering devices
- Control room (including SCADA)
- MV and HV conductors
- Steel structures

2.2.1.4.7 Nonhazardous Waste Management

The construction and operation of the Viracocha Hill BESS will generate nonhazardous and hazardous waste. The hazardous materials and wastes expected to be used or generated by the facility are described in the following subsections. The construction of the facility will generate various types of nonhazardous wastes, including debris and other materials requiring removal during site grading and excavation, excess concrete, lumber, scrap metal, and empty nonhazardous chemical containers.

Solid Waste Construction

Inert solid waste from construction activities may include lumber, excess concrete, metal, cardboard, general trash, and empty nonhazardous containers. Typical management practices required for nonhazardous waste management include recycling when possible, proper storage of waste and debris to prevent wind dispersion, and weekly pickup and disposal of wastes to local Class III landfills. The total amount of solid waste to be generated by construction activities has been estimated to be similar to that generated for normal commercial construction.

Solid Waste Operations

The facility will be unmanned and visited once monthly to conduct standard O&M activities. Any solid waste generated during these visits would be consolidated and taken offsite by O&M staff. All nonhazardous wastes will be recycled to the greatest extent practical and the remainder disposed of appropriately.

2.2.1.4.8 Hazardous Waste Management

Small quantities of hazardous wastes will be generated over the course of construction. Table 2-1 presents the expected wastes and volumes that may be generated during construction. These may include waste paint, spent solvents, and spent welding materials. All hazardous wastes generated during facility construction and operation will be handled and disposed of in accordance with applicable laws, ordinances, regulations, and standards (LORS). Any hazardous wastes generated during construction will be collected in hazardous waste accumulation containers near the point of generation and moved to the contractor's 90-day hazardous waste storage area located onsite. The accumulated waste will subsequently be delivered to an authorized waste management facility. Hazardous wastes will be either recycled or disposed of in a licensed Class I disposal facility as appropriate. Managed and disposed of properly, these wastes will not cause significant environmental or health and safety impacts.

Some hazardous wastes will be recycled, including used oils from equipment maintenance, and oil-contaminated materials such as spent oil filters, rags, or other cleanup materials. Used oil will be recycled, and oil or heavy metal contaminated materials (for example, filters) requiring disposal will be disposed of in a Class I waste disposal facility.

The Viracocha Hill BESS will generate minimal hazardous solid waste from maintenance such as electronic components, oily rags, and lighting fixtures. The source of these solid wastes will be from O&M activities during monthly inspections. These solid wastes will be disposed of at an appropriate landfill.

2.2.1.4.9 Hazardous Materials Management

Construction

A variety of chemicals will be stored and used during construction of the Viracocha Hill BESS. Hazardous materials to be used during construction include unleaded gasoline, diesel fuel, oil, lubricants (for example, motor oil, transmission fluid, and hydraulic fluid), solvents, adhesives, and paint materials. There are no feasible alternatives to these materials for construction or operation of construction vehicles and equipment, or for painting and caulking equipment. The contractor will bear sole responsibility and liability for such hazardous materials brought onto or generated at the site by the construction contractor. A hazardous materials handling program will be implemented during construction in compliance with applicable LORS. Table 2-1 presents expected hazardous waste that may be generated during construction.

Table 2-1. Wastes Generated during Construction

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Scrap wood, steel, plastic, paper, and similar	Construction	Normal refuse/Universal Waste	5,000 pounds per month	Nonhazardous	Recycle and/or dispose of at a Class II or III landfill
Scrap metal	Construction	Parts, wire	20 tons per year[a]	Nonhazardous	Recycle and/or dispose of at a Class II or III landfill
Concrete waste	Construction	Solids	20 tons	Nonhazardous	Recycle and/or dispose of at a Class II or III landfill
Empty liquid material containers	Construction	Drums, containers, totes	50 containers	Nonhazardous solids	Containers <5 gallons will be disposed of as normal refuse. Containers >5 gallons will be returned to vendors for recycling or reconditioning.
Spent welding materials (welding rods, wire, grinding wheels.)	Construction	Solids	100 pounds per month[b]	Hazardous	Recycle with vendors or dispose at a Class I landfill if hazardous.
Oily rags, oil sorbent	Cleanup of small spills	Hydrocarbons	10 pounds per month	Hazardous	Recycle at a permitted TSDF
Solvents, paint, adhesives	Maintenance	Varies	10 pounds per month	Hazardous	Recycle at a permitted TSDF
Spent lead acid batteries	Construction equipment, trucks	Heavy metals	0 batteries per year	Hazardous	Store no more than 10 batteries (up to one year) then recycle offsite
Spent alkaline and lithium-ion batteries	Equipment	Metals	10 batteries per month	Universal Waste Solids	Recycle or dispose of offsite at a Universal Waste Destination Facility
Waste oil filters	Equipment, vehicles	Hydrocarbons	0 gallons per month	Non-RCRA Hazardous Liquid	Dispose at a permitted TSDF
Sanitary waste	Portable toilet holding tanks	Sewage	600 gallons per day	Nonhazardous liquid	Remove by contracted sanitary service
Stormwater	Rainfall	Water	1.224 acre-feet[e] (from 10 year storm event)	Nonhazardous liquid	Discharge to existing permitted outfalls

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Fluorescent, mercury vapor, and LED Components	Lighting	Metals and PCBs	10 pounds per month	Universal Waste solids	Recycle or dispose of offsite at a Universal Waste Destination Facility

Note:

[a] 30 cubic yards

[b] Containers include <5-gallon containers and 55-gallon drums or totes

[e] Calculated from Alameda County Hydrology Manual for 10-year storm event

Sanitary waste based on 8 portable toilets in use

Concrete waste based on 10% of the approximate foundations for tesla Megapack 2XL containers and BOL equipment quantity of 108 containers

TSDF = treatment, storage, and disposal facility

Table 2-2. Wastes Generated during Operations

Waste	Origin	Composition	Estimated Quantity (lbs/yr)	Classification	Disposal
Fluorescent tubes	Lighting of maintenance areas	Metals	10	Universal waste solids	Recycle or dispose of offsite at a Universal Waste Destination Facility
Electronic Components	Distributed control system, BESS instruments and equipment	Metals	100 pounds per year	Universal waste solids	Recycle with an approved facility
Oily rags and sorbents	Maintenance, wipe down of equipment, cleanup of small spills	Hydrocarbons and cloth	5	Hazardous	Recycle with an approved facility or disposal by certified oil recycler
Controlled waste streams	Batteries and fire extinguishers	Controlled Substance	50	Hazardous	Recycle with an approved facility or disposal by certified waste hauler

Operation

Prior to operation, the Viracocha Hill BESS will develop and implement a Hazardous Materials Business Plan (HMBP), which will include procedures for the following:

- Hazardous materials handling, use, and storage
- Emergency response
- Spill control and prevention
- Employee training
- Reporting and record keeping

The storage, containment, handling, and use of these chemicals will be managed in accordance with applicable LORS.

Limited hazardous materials will be stored onsite during operations and will be stored within equipment. Insulating oil will be encased in the transformers, the circuit breakers will contain sulfur hexafluoride, and diesel will be stored within the fire pump engine and diesel generator's fuel tanks. Secondary containment areas will provide secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. Any chemical spills in these areas will be removed with portable equipment and reused or disposed of properly. Other chemicals will be stored and used in their delivery containers.

Safety equipment will be provided for personnel use if required during chemical containment and cleanup activities. All personnel working with chemicals will be trained in proper handling and emergency response to chemical spills or accidental releases. Absorbent materials will be stored onsite for spill cleanup. Table 2-2 presents expected hazardous waste that may be generated during operations.

2.2.1.4.10 Fire Protection and Safety Systems

The Viracocha Hill BESS fire protection and safety systems will be designed to limit personnel injury, property loss, and facility downtime caused by a fire or other event. The systems will be designed in accordance with:

- Federal, state, and local fire codes, occupational health and safety regulations, and other jurisdictional requirements
- California Building Code (CBC)
- Applicable NFPA standards

The fire protection system design is under way and will be developed at a later stage in the detailed design.

The fire protection system is anticipated to include a diesel-fired fire water pump. Fire water storage will be included within an approximately 28,000-gallon fire water tank, which will ensure an adequate water supply for fire protection. The onsite transformers will be protected per the NFPA by maintaining adequate separation. The fire water supply and pumping system will provide an adequate quantity of firefighting water.

In addition to the fixed fire protection system, portable carbon dioxide (CO_2) and dry chemical extinguishers will be located throughout the plant (including the switchgear rooms), with size, rating, and spacing in accordance with NFPA 10. Handcart CO_2 extinguishers also will be provided in the turbine area as necessary for specific hazards.

Local building fire alarms will be provided in accordance with NFPA 72. All materials will be free of asbestos and will meet the fire and smoke rating requirements of NFPA 255.

2.2.1.4.11 Plant Auxiliaries

Lighting

Lighting on the Project site will be limited to areas required for safety, will be directed onsite to avoid backscatter, and will be shielded from public view to the greatest extent practical.

All lighting that is not required to be on during nighttime hours will be controlled with sensors or switches operated such that the lighting will be on only when needed.

Lighting will be provided in the following areas:

- Outdoor equipment areas
- Transformer areas
- Perimeter roads
- Parking areas
- Facility entrance

Emergency lighting from DC battery packs will be provided in areas of normal personnel traffic to permit egress from the area in case of failure of the normal lighting system. In major control equipment areas and electrical distribution equipment areas, emergency lighting permits equipment operation to allow auxiliary power to be reestablished.

Grounding

Safety is imperative for site personnel and electrical equipment. The electrical system is protected against ground faults that result in unit ground potential rises. The station grounding system provides a path to dissipate unsafe ground fault currents and reduces the ground potential rise. The grounding conductor will be sized for sufficient capacity to reduce the most severe fault conditions to within allowable limits by reducing voltage gradients to remote earth. The ground grid spacing will be assessed to provide sufficient step and touch potentials throughout the site. Bare conductors would be installed below grade in a grid pattern. Each junction of the grid will be bonded together by either an exothermic welding process or mechanical connectors.

Ground grid impedance performed as part of the grounding study would be used to determine the necessary number of grounding electrodes and grid spacing to ensure safe step and touch potentials under fault conditions. The grounding conductor will bond the ground grid to the building steel and non-energized metallic parts of electrical equipment. Isolated grounding conductors to the ground grid will be provided for sensitive control systems.

Cathodic Protection and Lightning Protection

Cathodic protection for underground metallic piping and structures (except rebar) takes into account cathodic protection and grounding influences associated with any existing cathodic protection system to which the facility is adjacent and connected. Cathodic protection would be provided by an impressed current system, a sacrificial system, and protective coatings. Lightning protection would be furnished for buildings and structures in accordance with NFPA 78. Lightning protection for the switchyards would be in accordance with industry practice.

Distributed Control System

A Distributed Control System (DCS) would provide modulating control, digital control, and monitoring and indicating functions for operation of the proposed facility at an offsite control room.

The DCS would provide coordinated control among the BESS equipment and electrical offtaker. The BESS systems would interface with the DCS via a data link and/or hardwired input/output (I/O) devices. A sequence-of-events recorder will be an integral part of the DCS. Indication of process changes that warrant action (process alarms), or information that the operator in the offsite control room should be made aware of (annunciation) will primarily be done by the DCS.

2.2.1.4.12 Thermal System

The manufacturer of the BESS system has not yet been selected and the final design of the facility has not been finalized; however, it is anticipated that if the Tesla Megapack, or similar, is selected, an external HVAC or thermal system will not be required. The thermal system is anticipated to be a self-contained closed-loop coolant (50-50 ethylene glycol-water) and refrigerant (typically R-134a) unit.

2.2.1.4.13 Facility Civil/Structural Features

This section describes the enclosures, structures, and other civil/structural features that will constitute the facility.

The facility will consist of the following major components:

- BESS foundations
- Medium voltage collection systems
- Onsite electrical equipment including a step-up transformer and circuit breakers
- Emergency electrical backup system including switchgear, an emergency generator, and fuel tank
- Fire protection system including a fire water loop, electric and diesel fire water pumps, and a storage tank.
- Roadways
- Security fencing and systems

The civil/structural features related to these major components are described in the following subsections.

Individual reinforced concrete foundations at grade will be used to support mechanical and electrical equipment.

2.2.1.4.14 Skids

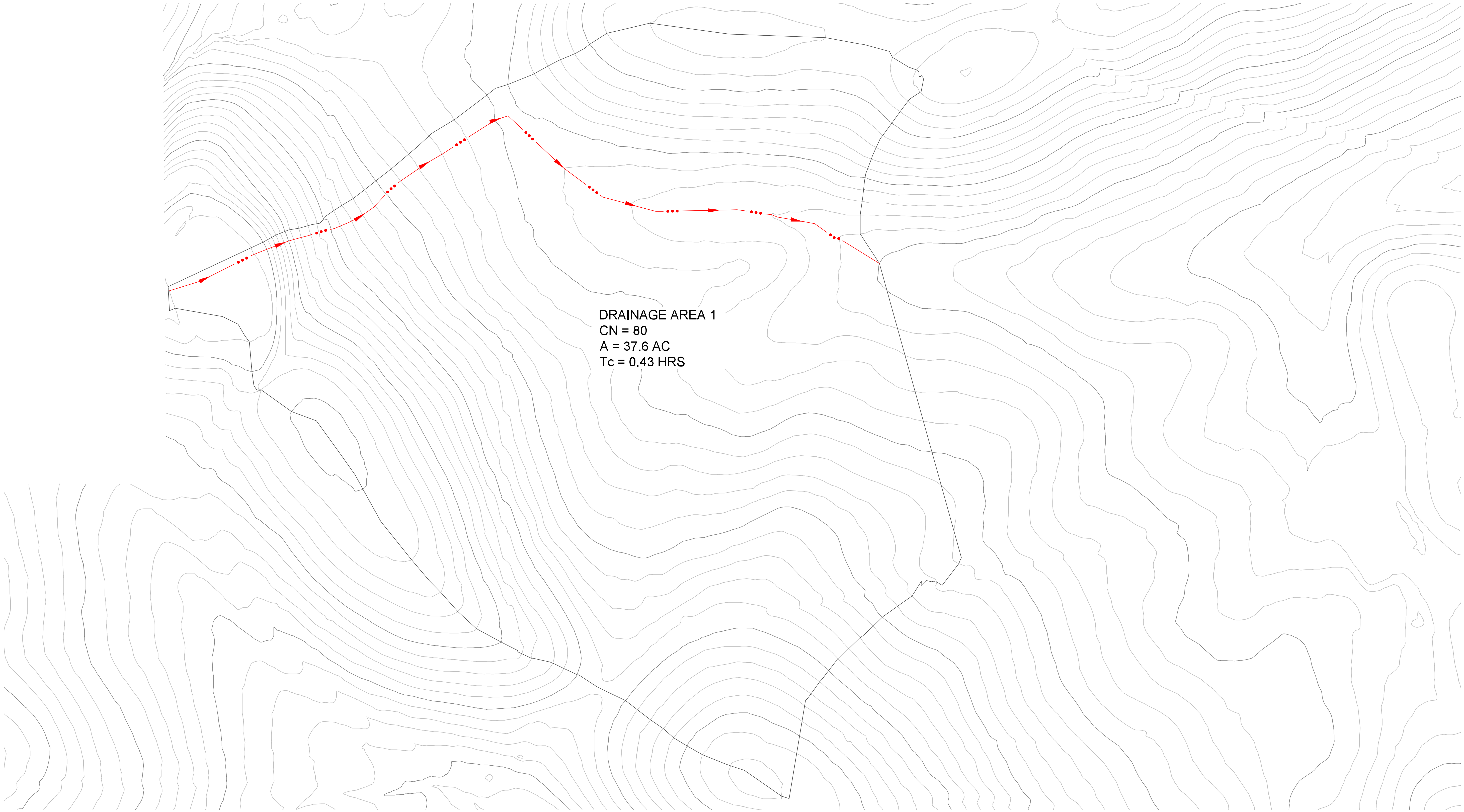
If needed, packaged skid-mounted equipment will be supported by a reinforced concrete mat foundation.

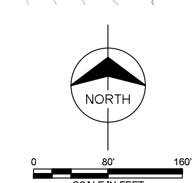
2.2.1.4.15 Roads

The facility will be accessed by the existing unpaved and private Wind Farm Road that services the adjacent wind farm. The main access to the facility will be via an approximately 2.1-mile-long Wind Farm Road that extends from Altamont Pass Road to the proposed Project. No improvements will be made to Wind Farm Road, however the 0.3-mile-long access road from Wind Farm Road to the BESS site will be improved by widening and graveling the existing road. The BESS yard and all in-plant roads within the fence line will be graded and graveled.

2.2.1.4.16 Site Grading and Drainage

The site is fairly level. The proposed drainage design in general will flow from the southwest toward the northeast portion of the site. Figures 2-3 and 2-4 show the pre- and post-construction site drainage.



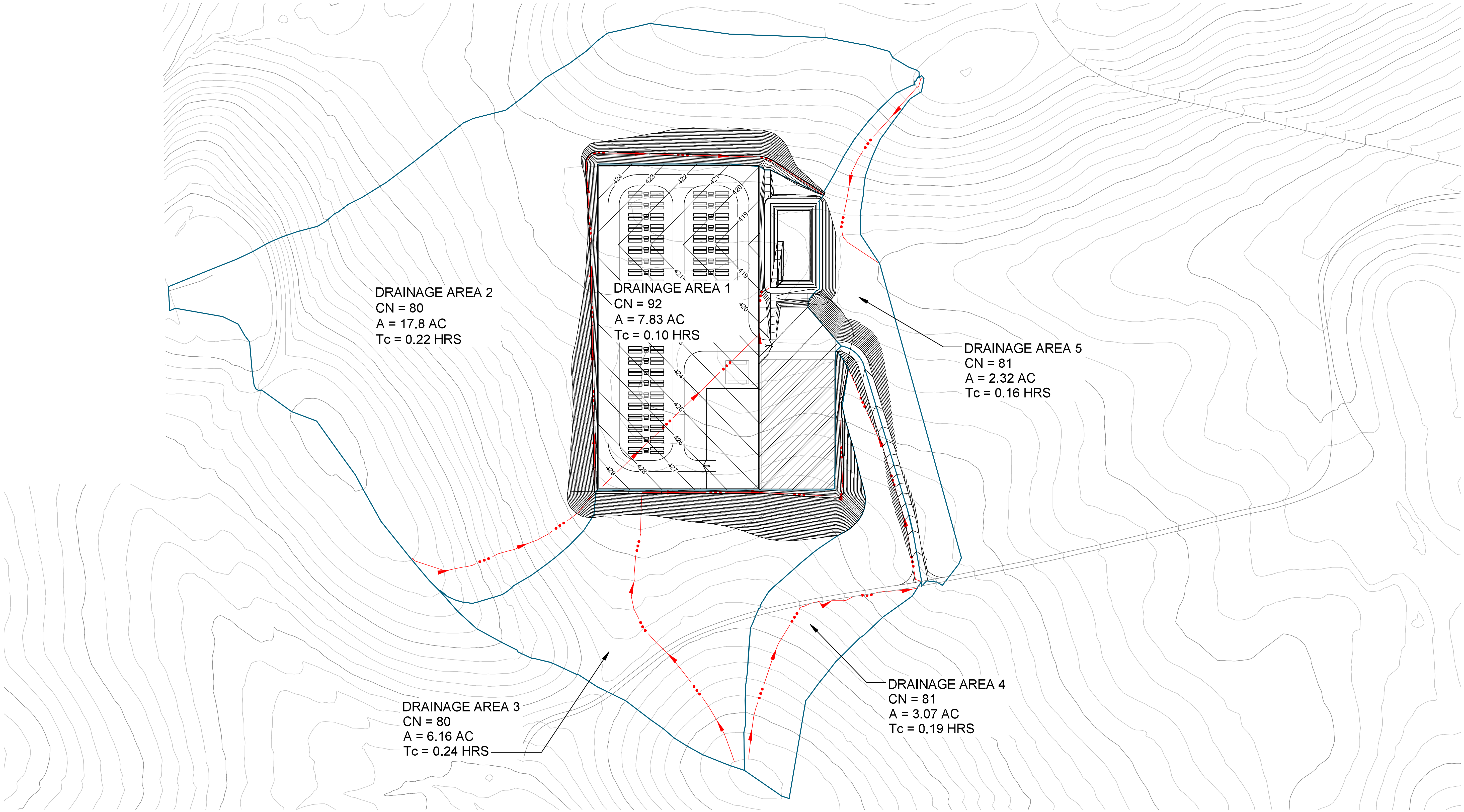


REFERENCE DRAWING

Figure 2-3
Pre-Construction Site Drainage
Viracocha Hill BESS Project
Alameda County, California

Jacobs

Source: BURNS & MCDONNELL 177321_SALKA_ENERGY_VIRACOCHA_HILL_BE SK-C100.DWG



REFERENCE DRAWING

Figure 2-4
Post-Construction Site Drainage
Viracocha Hill BESS Project
Alameda County, California

Jacobs

Source: BURNS & MCDONNELL 177321_SALKA_ENERGY_VIRACOCHA_HILL_BE SK-C200.DWG

Within the Project site equipment will be constructed on foundations with the overall site grading scheme designed to route surface water around and away from all equipment and buildings. The stormwater drainage system is sized to accommodate 3.93 inches of precipitation in a 24-hour period (100-year storm event) and to comply with applicable local codes and standards. Buildings and equipment are constructed in a manner that provides protection from the 100-year storm.

Earthwork

Excavation work will consist of the removal, storage, and disposal of earth, sand, gravel, vegetation, organic and deleterious material, loose rock, boulders, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stored in small stockpiles at designated locations using proper erosion protection methods. Excess materials will be removed from the site and disposed of at an acceptable location. Disposal of any contaminated material encountered during excavation will comply with applicable federal, state, and local regulations.

The existing site topography shown on Figure 2-3 will be graded to provide a level area for the Project site. It is assumed that excavated materials will be suitable for backfill.

Graded areas will be smooth, compacted, free from irregular surface changes, and sloped to drain. Cut and fill slopes for permanent embankments will be designed to withstand horizontal ground accelerations consistent with the applicable building codes. Slopes for embankments will be no steeper than 2:1 (horizontal: vertical). Areas to be backfilled will be prepared by removing unsuitable materials and rocks. The bottom of an excavation will be examined for loose or soft areas. Such areas will be excavated fully and backfilled with compacted fill.

Backfilling will be done in layers of uniform, specified thickness. Soil in each layer will be properly moistened to facilitate compaction to achieve the specified density. To verify compaction, representative field density and moisture-content tests will be performed during compaction. All testing will be in accordance with ASTM International standards.

The depth of excavation is presented in Figures 2-5a, b, and c.

2.2.1.4.17 Sanitary Sewer Systems

No sanitary facilities will be located at the site once operational.

2.2.2 Construction

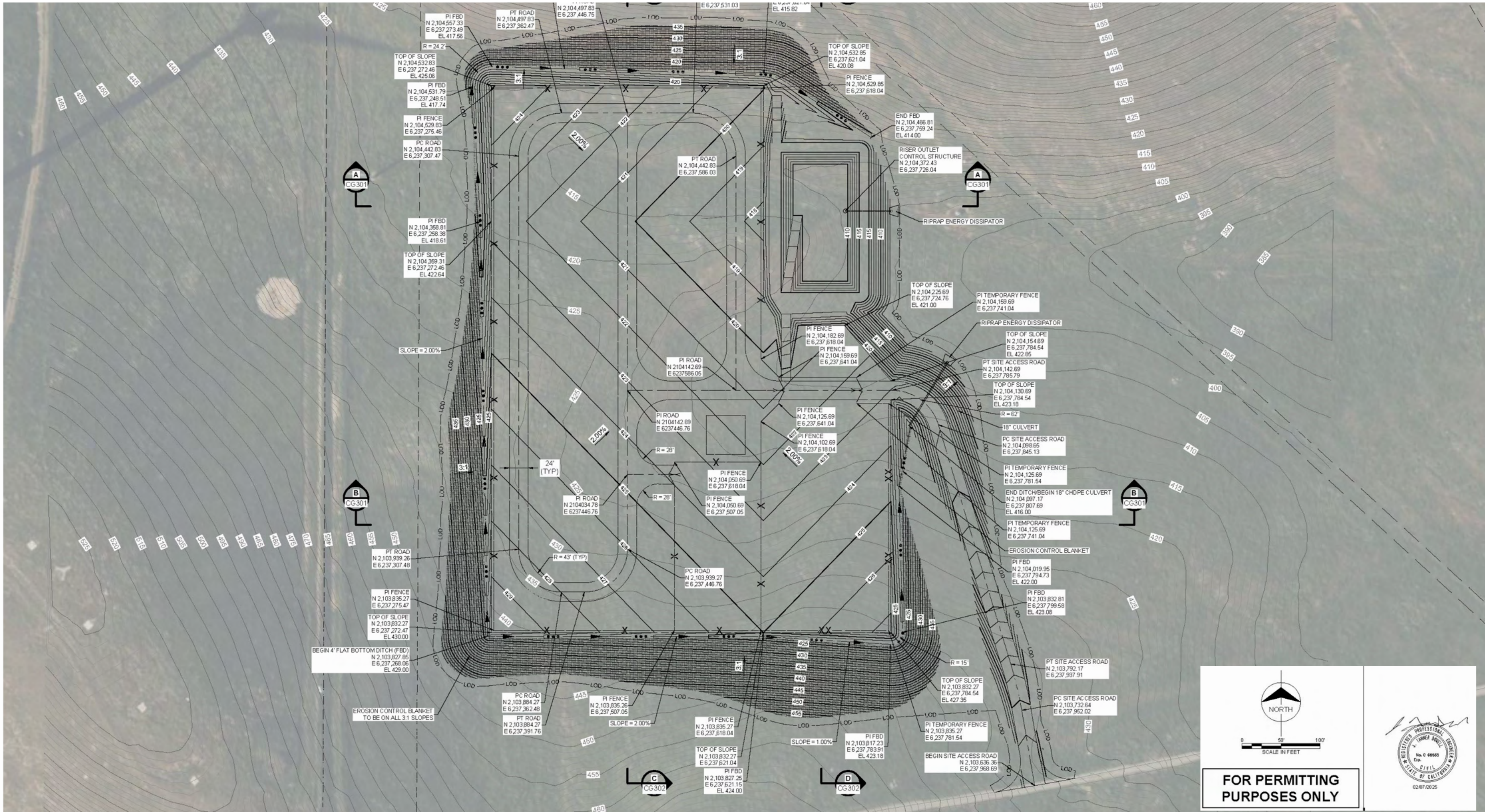
The overall project schedule for the Viracocha Hill BESS construction and commissioning is expected to take approximately 14 months. The schedule and staffing requirements are described in the following sections by major project components.

2.2.2.1 BESS Facility

Construction is anticipated to begin in the second quarter of 2026. The overall Project staffing schedule is displayed in Table 2-3 by month. The construction schedule is based on one shift, 10 hours per day, six days per week. Overtime and shift work for construction may be used to maintain or enhance the construction schedule.

Construction Facilities

Mobile trailers or similar suitable facilities (modular offices) will be used as construction offices. These construction facilities will be located at one of the nearby construction laydown areas. Visitor parking will be available in an area adjacent to the construction offices.



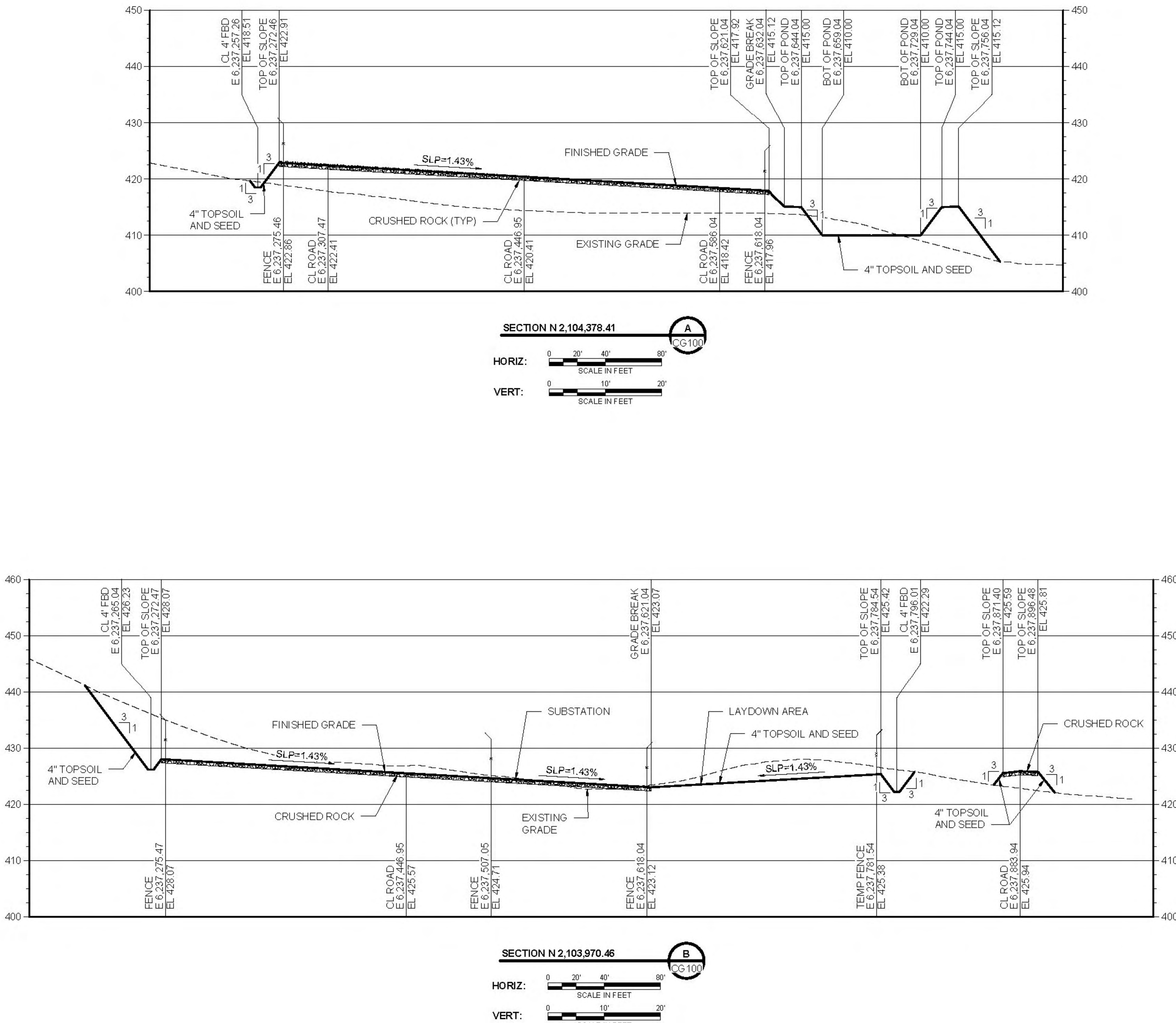
NOTES:

1. ELEVATIONS SHOWN ARE FINISHED GRADE.
2. COORDINATES BASED ON CALIFORNIA STATE PLANE, ZONE III, US FOOT.

Source: BURNS & MCDONNELL 177321_SALKA_ENERGY_VIRACOCHA_HILL_BE CG100.DWG

Figure 2-5a
Depth of Excavation
Viracocha Hill BESS Project
Alameda County, California

Jacobs



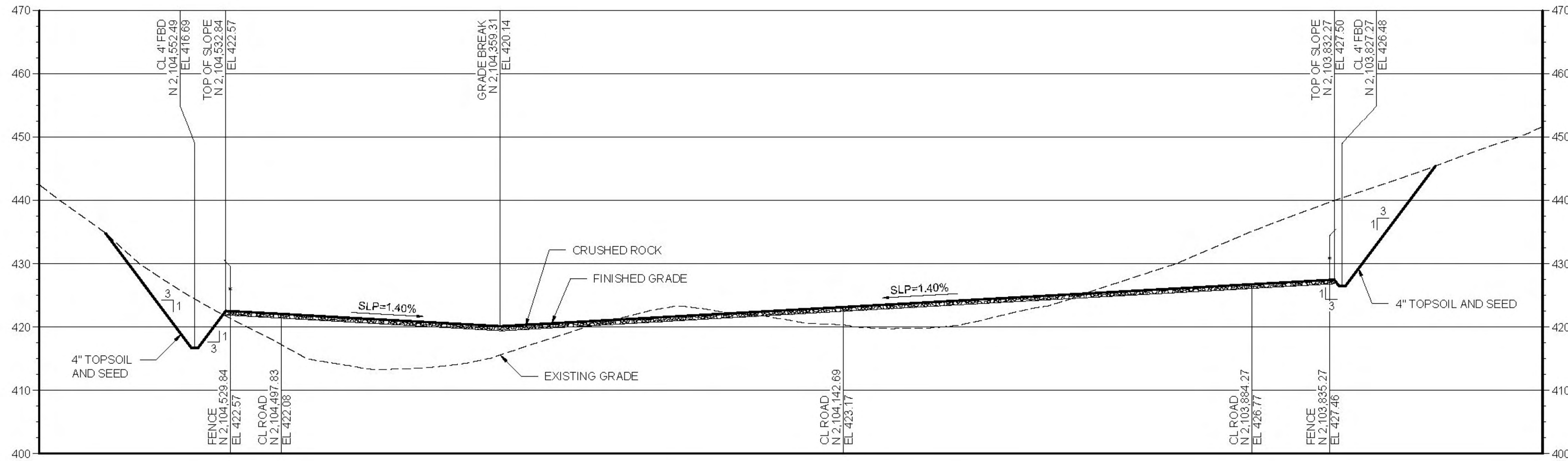
FOR PERMITTING PURPOSES ONLY

02/07/2025

Figure 2-5b
Depth of Excavation
Viracocha Hill BESS Project
Alameda County, California

Jacobs

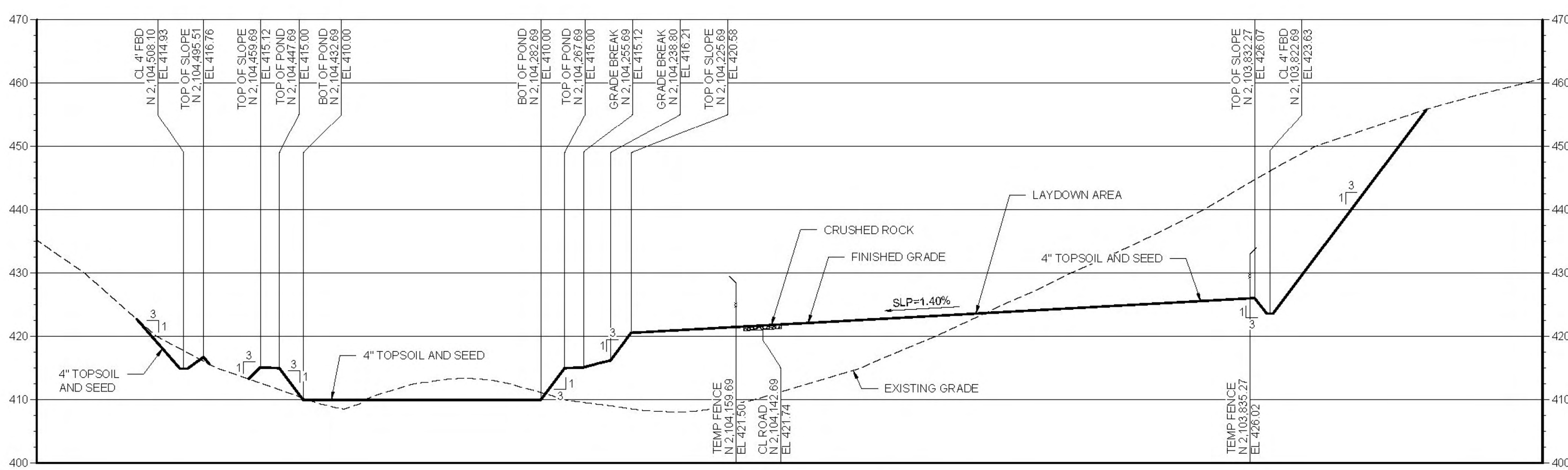
Source: BURNS & MCDONNELL 177321_SALKA_ENERGY_VIRACOCHA_HILL_BE CG301.DWG



SECTION E 6,237,446.95 C CG100

HORIZ: 0 20' 40' 80' SCALE IN FEET

VERT: 0 10' 20' SCALE IN FEET



SECTION E 6,237,695.22 D CG100

HORIZ: 0 20' 40' 80' SCALE IN FEET

VERT: 0 10' 20' SCALE IN FEET

Source: BURNS & MCDONNELL 177321_SALKA_ENERGY_VIRACOCHA_HILL_BE CG302.DWG

FOR PERMITTING PURPOSES ONLY

REGISTERED PROFESSIONAL ENGINEER J. TANNER DORELL No. C 86555 CIVIL STATE OF CALIFORNIA 02/07/2025

Figure 2-5c
Depth of Excavation
Viracocha Hill BESS Project
Alameda County, California

Jacobs

Table 2-3. Construction Workforce by Month

Construction	Months																				Man Months	Days/Mo.	Man Days	Hrs/Day	Man Hours
	Construction														Decommission/Closure										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	361	362	363	364	365	366	367				
Phases																									
Site Preparation	5																								
Grading/Civil	5	10			10	10																			
Foundation Installation		5	20	20	10																				
BESS Installation				10	10	20	30	50	50	30	20														
Substation Installation					10	10	10	16	16																
Gen-Tie and Conductor Installation								10	10	10															
Commissioning											8	8	8	8											
Demolition															20	30	30	30	30	30	20				
Data																									
Carpenters		5	5	5	5																	20	23	460	10	4600
Laborers/Equipment Operators	10	10	10	10	10										10	20	20	20	30	30	20	200	23	4600	10	46000
Teamsters																						0	23	0	10	0
Electricians				10	20	30	40	76	76	40	28	8	8	8	10	10	10	10				384	23	8832	10	88320
Cement Finishers			5	5	5																	15	23	345	10	3450
Painters																						0	23	0	10	0
Total Craft Labor	**10**	**15**	**20**	**30**	**40**	**30**	**40**	**76**	**76**	**40**	**28**	**8**	**8**	**8**	**20**	**30**	**30**	**30**	**30**	**30**	**20**	**619**	**23**	**14237**	**10**	**142370**
Total Supervision	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**6**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**126**	**23**	**2898**	**10**	**28980**
Total Manpower	**18**	**23**	**28**	**38**	**48**	**38**	**48**	**84**	**84**	**48**	**34**	**12**	**12**	**12**	**24**	**34**	**34**	**34**	**34**	**34**	**24**	**745**	**23**	**17135**	**10**	**171350**

2.2.2.2 Construction Parking/Laydown/Storage

Construction worker parking, laydown, and storage will be within the project boundary as shown in Figure 1-4.

Emergency Facilities

Emergency services will be coordinated with the local fire department and hospital. First aid kits will be provided at the construction site and regularly maintained. As required by federal, state, and local requirements, first aid training will be provided to the appropriate staff.

Fire extinguishers will be placed throughout the Project area at strategic locations during construction.

Construction Utilities

Temporary utilities will be provided for the construction offices, the laydown and parking area, and the Project construction site. Temporary construction power at the site will be supplied by temporary generators and, as practical, utility-furnished power. Area lighting will be provided and strategically located for safety and security. Imported water will be used for construction water. Drinking water will be imported and distributed daily. Portable toilets will be provided throughout the site.

Construction Equipment and Materials Delivery

Equipment planned for use in the construction of the Viracocha Hill BESS is provided in Table 2-4. Truck deliveries will occur primarily on weekdays between 6:00 a.m. and 4:30 p.m. The estimated daily average of truck deliveries is shown in Table 2-5. Materials such as concrete, pipe, wire and cable, fuels, reinforcing steel, and small tools and consumables will be delivered to the site by truck.

2.2.2.3 Interconnection Transmission Lines

2.2.2.3.1 Project Schedule and Workforce

The Project includes construction of an approximately 1,325-foot-long 230 kV electrical interconnection gen-tie line from the Viracocha Hill BESS to the Point of Interconnection at the Kelso-Tesla 230kV line via the Ralph Substation. Construction of the gen-tie line is estimated to take up to 3 months.

2.2.2.3.2 Gen-tie Right-of-way

PG&E requirements, the National Electrical Safety Code (NESC), and operational considerations determine the width of the ROW. Specific ROW requirements depend on the structure type, height, span, and conductor configuration. PG&E generally requires ROWs that are the height of the structure on either side of the centerline to avoid issues associated with structure failure. The single steel pole structures for the Viracocha Hill BESS lines would range from 100 to 125 feet in height, with an overall permanent ROW width of 50 feet.

2.2.2.3.3 Construction Activities

Construction of an interconnection gen-tie includes structure site clearing; installing foundations; assembling and erecting the structures; clearing, pulling (stringing individual lines through conductors), tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise/ground rods; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process. This may require several construction crews operating simultaneously in different locations. Table 2-6 lists permanent disturbance for the Project.

Table 2-4. Construction Equipment

Description	Months																				
	Construction														Decommissioning/Closure						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	361	362	363	364	365	366	367
Phases																					
Site Preparation	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grading/Civil	5	10	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foundation Installation	0	5	20	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BESS Installation	0	0	0	10	10	20	30	50	50	30	20	0	0	0	0	0	0	0	0	0	0
Substation Installation	0	0	0	0	10	10	10	10	10	0	0	0	0	0	0	0	0	0	0	0	0
Gen-Tie and Conductor Installation	0	0	0	0	0	0	0	10	10	10	0	0	0	0	0	0	0	0	0	0	0
Commissioning	0	0	0	0	0	0	0	0	0	0	8	8	8	8	0	0	0	0	0	0	0
Demolition	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	30	30	30	30	30	20
Data																					
Excavators			2	2	1										1	1	1	1	1	1	1
Backhoe																					
10-Wheel Dump Truck	1	1																			
Dozer	2	2			1	1									1	1	1	1			
Front End Loader	1	1			1	1									1	1	1	1	1	1	1
75-Ton Hydraulic Crane																					
35-Ton Hydraulic Crane																					
Pile Driver																					
Forklift		1	1	1	1	2	2	3	3	2	2	1	1	1	2	2	2	2	2	2	2
Grader	1	1																		1	1
Compactor	1	1	1	1	1	1															
Stake Truck																					
Water Truck	1	1	1	1																	
Pick-up Truck	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Air Compressor																					
Light Towers																					
Heavy Lift Lattice Boom Main Crane						1	1	1								1	1				
Heavy Lift Lattice Boom Tail Crane																					
Heavy Lift Gantry Crane																					

Table 2-5. Construction Truck Deliveries by month

Months	Construction														Decommissioning/Closure									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	361	362	363	364	365	366	367	Trucks per day per month	Days per Month	Total Trucks
Data																								
Fill Material	2	5				2	2															9	23	207
Mechanical Equipment																						0	23	0
Electrical Equip. & Materials								1	1	1	1	1					2	2	2			11	23	253
Concrete and Rebar		2	5	5	2												1	3	3	5	2	28	23	644
Consumables & Supplies	0.3	0.25	0.25	0.25	0.3	0.25	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3								3.25	23	74.75
Contractor Mobilization	1																					0	23	0
Contractor Demobilization														1								1	23	23
Construction Equipment	1					1																2	23	46
Heavy Haul Truck Deliveries																								
Batteries						4	2								2	4						12	23	276
Total Truck Traffic																								
Trucks/Day/Month	4.3	7.3	5.3	5.3	2.3	7.3	4.3	1.3	1.3	1.3	1.3	1.3	0.3	1.3	2.0	4.0	3.0	5.0	5.0	5.0	2.0	69.5	23.0	1598.5
Trucks/Month	97.8	166.8	120.8	120.8	51.8	166.8	97.8	28.8	28.8	28.8	28.8	28.8	5.8	28.8	46.0	92.0	69.0	115.0	115.0	115.0	46.0			0
Truck Trips																								3,122

Table 2-6. Project Features and Permanent Disturbances

Project Features	Approximate Dimensions
Project Site Inclusive of Laydown and Parking (Acres)	17
Gen-Tie Line (Linear Feet)	1,325[a]
Access Road Improvements (Miles)	0.3 [a]
Road Improvements (Acres)	0.15
Alternate Substation (Acres)	2 acres

Note:

[a] Exclusive of 50-foot permanent buffer.

Structure Sites

At each structure site, leveled areas (pads) would be needed to facilitate the safe operation of equipment, such as construction cranes. The leveled area required for the location and safe operation of large cranes would be approximately 30 feet by 40 feet. At each structure site, a work area of approximately 200 square feet would be required for the location of structure footings, assembly of the structure, and the necessary crane maneuvers. The work area would be cleared of vegetation only to the extent necessary. After line construction, all pads not needed for normal gen-tie maintenance would be restored to natural contours to the greatest extent possible and be revegetated where required.

Clearing and Grading within Right-of-way

Clearing and grading would be conducted only as necessary in construction areas for the safe movement of vehicles and construction activities.

Foundation Installation

Excavations for foundations would be made with power drilling equipment. A vehicle-mounted power auger or backhoe would be used to excavate for the structure foundations. In rocky areas, the foundation holes would be excavated by drilling. Footings would be installed by placing reinforcing steel and an anchor bolt cage into each foundation hole, positioning the bolt cage, and encasing it in concrete. Spoil material would be used as fill where suitable. Spoil materials that cannot be used as fill would be removed to a suitable location by the construction contractor for disposal. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks.

Structure Assembly and Erection

Structural steel components and associated hardware would be shipped to each structure site by truck. Steel structure sections would be delivered to tower locations where they would be fastened together to form a complete structure and hoisted into place by a large crane.

Conductor Installation

After the structures are erected, insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position.

Pilot lines would be pulled (strung) from structure to structure and threaded through the stringing sheaves at each structure. Following pilot lines, a larger diameter, stronger line would be attached to conductors to pull them onto structures. This process would be repeated until the ground wire or conductor is pulled through all sheaves.

The shield wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment. Sites for tensioning equipment and pulling equipment would be up to two miles apart. This distance will be essentially doubled where it is prudent to do so by pulling in two sets of conductors back-to-back.

Each tensioning site would be an area approximately 200 feet by 200 feet. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be necessary at each tensioning site. The tensioner in concert with the puller would maintain tension on the shield wires or conductors while they are fastened to the structures. The pulling site would require approximately half the area of the tension site. A puller, line trucks, and tractors needed for pulling and temporarily anchoring the shield wires and conductor would be necessary at each pulling site.

Ground Rod Installation

Part of standard construction practices prior to wire installation would involve measuring the resistance of structure footings. If the resistance to remote earth for each transmission structure is greater than 25 ohms, additional ground rods would be installed to lower the resistance below 25 ohms.

2.2.3 Facilities, Operations, and Maintenance

The Viracocha Hill BESS is expected to have an operating life of 25 years. Reliability and availability are based on this projected operating life. The Viracocha Hill BESS will not have onsite staff but will be monitored offsite. Monthly inspections will be conducted by two staff members.

2.2.3.1 BESS Facility

2.2.3.1.1 Annual Operating Practices

Generally, the Viracocha Hill BESS will be operated 24 hours, 7 days per week to meet contractual obligations.

Planned maintenance will be addressed with safe operations as the primary priorities. Planned maintenance beyond these priorities will be coordinated to optimize availability and will be planned during seasonal periods when the need for electricity is reduced.

2.2.3.1.2 Augmentation Schedule

An augmentation schedule is a critical component of the project's lifecycle planning. It outlines how the Project will be maintained and enhanced over time to address natural battery degradation. As batteries age, their ability to store and discharge energy declines. The augmentation plan ensures that new battery modules are added or replaced as needed to maintain the system's designed capacity and meet energy delivery obligations.

The Project would have up to 409 MWh of storage when first constructed, and up to 140 MWh added at intervals during the life of the facility to maintain the nominal 362.8 MWh at the POI.

The preliminary proposed augmenting will take place in the following years:

- **Year 4 -** Eight (8) Tesla Megapack 2XL, Two (2) MVT, 30.57 MWh at POI
- **Year 9 -** Eight (8) Tesla Megapack 2XL, Two (2) MVT, 30.57 MWh at POI
- **Year 14 -** Twelve (12) Tesla Megapack 2XL, Three (3) MVT, 45.86 MWh at POI
- **Year 22-** Eight (8) Tesla Megapack 2XL, Two (2) MVT, 30.57 MWh at POI

2.2.3.1.3 Degree of Automation and Control Systems

The Viracocha Hill BESS will be designed with a high degree of automation to reduce the need for onsite staff. Most equipment required to support the operation of the facility is incorporated into the BESS system with 24/7 monitoring.

2.2.3.2 Interconnection Transmission System Operation and Maintenance

Operation of the transmission system is controlled by PG&E, the regional balancing authority and transmission owner. The Point of Interconnection is at the proposed PG&E Kelso-Tesla 230kV line via the Ralph substation approximately 1,325 feet from the Viracocha Hill BESS. The Applicant will engineer, construct, own, operate, and maintain the approximately 1,325-foot-long interconnection gen-tie between the proposed Viracocha Hill BESS and the Ralph substation. Anticipated maintenance activities for the interconnection transmission system are described as follows:

- Access ways to poles and structures will be provided, as required. All access ways will be maintained to minimize erosion and to allow access by the maintenance crew.
- Land use activities within and adjacent to the gen-tie ROW will be permitted within the terms of the easement. Incompatible uses of the ROW include buildings and tall trees that interfere with required line clearances, as well as storage of flammable materials, or other activities that compromise the safe operation of the interconnection gen-tie.
- The interconnection gen-tie would be inspected regularly by both ground patrol and possibly air patrols. Maintenance would be performed as needed.
- Emergency repairs will be made if the interconnection gen-tie is damaged and requires immediate attention. Maintenance crews will use tools and other such equipment, as necessary, for repairing and maintaining insulators, conductors, structures, and access ways. When access is required for nonemergency maintenance and repairs, the Applicant would adhere to the same precautions identified for original construction.
- The buildup of particulate matter on the ceramic insulators supporting the conductors on electrical lines increases the potential for flashovers, which affects the safe and reliable operation of the line. Structures with buildup of particulate matter are identified for washing during routine inspections of the lines. Washing operations consist of spraying insulators with deionized water or limestone powder through high-pressure equipment mounted on a truck.

2.2.4 Facility Closure

Facility closure can be either temporary or permanent. Facility closure can result from two circumstances: (1) the facility is closed suddenly and/or unexpectedly because of unplanned circumstances, such as a natural disaster or other unexpected event; or (2) the facility is closed in a planned manner, such as at the end of its useful economic or mechanical life or because of gradual obsolescence. The two types of closure are discussed in the following subsections.

2.2.4.1 Temporary Closure

Temporary or unplanned closure can result from numerous unforeseen circumstances, ranging from natural disaster to terrorist attack to economic forces. For a short-term unplanned closure, where there is no facility damage resulting in a hazardous substance release, the facility would be kept “as is,” ready to restart operations when the unplanned closure event is rectified or ceases to restrict operations. If there is a possibility of hazardous substances release, the Applicant will notify the appropriate agencies and follow emergency plans that are appropriate to the emergency. Depending on the expected duration of the shutdown, chemicals may be drained from the storage tanks and other equipment. All wastes (hazardous and nonhazardous) will be disposed of according to LORS in effect at the time of the closure. Facility security will be retained so that the Viracocha Hill BESS is secure from trespassers.

Prior to the beginning of operations, the Applicant will develop a contingency plan to deal with unplanned or unexpected plant closure. This plan will include the following elements:

- Taking immediate steps to secure the facility from trespassing and encroachment
- Procedures for the safe shutdown and startup of equipment and procedures for dealing with hazardous materials, including draining of vessels and equipment and disposal of wastes
- Communication with CEC and local authorities regarding the facility damage and compliance with LORS

2.2.4.2 Permanent Closure

The planned economic life of the Viracocha Hill BESS facility is 25 years. However, if the facility were economically viable at the end of the 25 -year operating period, it could continue to operate for a much longer period. As operators continuously maintain the equipment up to industry standards, there is every expectation that the generation facility will have value beyond 25 years. It is also possible that the facility could become economically noncompetitive earlier than the planned facility's 25 -year useful life. Decommissioning activities will follow a decommissioning plan that will be developed and submitted to the CEC for review at least 12 months prior to planned facility closure. The permanent closure plan will include the following elements:

- Activities required to permanently close the facility
- A listing of all applicable LORS and a plan to comply with them
- Coordination with CEC and interested local authorities, including workshops, to coordinate closure activities
- The maximization of recycling and other proper disposal methods
- The maintenance of site security, as required

In case of permanent closure, the facility will be cleaned, and the facility components will be salvaged to the greatest extent possible. All solids will be tested. Those found to be hazardous will be transferred to a permitted Class I landfill. Nonhazardous wastes will be transferred to a permitted Class II or Class III landfill as appropriate for each waste. These solids will be managed and disposed of properly so as not to cause significant environmental or health and safety impacts.

2.3 Facility Availability, Reliability, and Safety

2.3.1 Facility Availability

The Viracocha Hill BESS will employ Tesla Megapack 2XL or similar and will be available at all times.

2.3.1.1 Range of Availability

Overall availability varies from year to year because of both unplanned causes and the structure of the overhaul cycle. Forced unavailability changes somewhat from year to year because the numbers and lengths of forced outages vary randomly. It is anticipated the facility will be moved offline in year 4 and every five years thereafter for regular maintenance during the lifetime of the facility as described in Section 2.2.3.1.2. The expected service life of the facility is 25 years.

2.3.1.2 Basis for Forecasts of Availability

The Viracocha Hill BESS is expected to provide a high availability and be responsive to the needs of the system for power storage. Planned outages are anticipated to occur every 4 years in seasons when energy demand is relatively low.

2.3.2 Reliability

Critical functions and parameters will have redundant sensors, controls, indicators, and alarms. The system will be designed such that critical controls and indications do not fail because of a failure in the control system implementation of redundancy logic.

Control systems in general, and especially the protection systems, will be designed according to stringent failure criteria.

The following subsections identify equipment redundancy as it applies to project availability.

2.3.2.1 BESS Facility

The BESS facility includes 108 Tesla Megapacks 2XL for a total of 102.12 MW of independent battery storage unit providing a BOL overbuilt of 12.59% sufficient to satisfy the capacity at the POI (90.7 MW) for the first 4 years. The BESS will be augmented following the augmentation schedule provided in Section 2.2.3.1.2 to keep the power at the POI over the minimum of 90.7 MW for the entire plant useful life of 25 year. At the EOL the plant will be composed of 144 Tesla Megapacks 2XL (or similar).

2.3.2.2 Balance of Plant Systems

The fire water system is to provide fire protection for the equipment; it includes a primary fire water pump, a backup diesel-powered pump, and the fire water pipeline system.

2.3.2.3 Operations Maintenance Plan

2.3.2.3.1 General Approach

During the operations phase, the Project Owner will perform all tasks necessary to operate and maintain the plant in accordance with an Operating Plan, approved procedures, and prudent, industry standards, including:

- Operations management
- Maintenance management
- Administrative support

Each of these are described in the following subsections.

Operations Management

The Project will have no onsite employees. Monthly inspections will be conducted by one to two operations staff shared between the BESS..

Staffing

Staffing plans are designed for the ongoing operational and maintenance requirements of the facility. All periodic testing, inspections, and maintenance activities will be identified, as well as those operational and maintenance requirements that require specialized and extra assistance at specific times during the maintenance cycle of the facility.

The onsite operations and maintenance staff will be supported by the home office, the engineering procurement contractors, and subcontractors for nonroutine functions. Associated technical and specialized vendor support will be subcontracted as needed during planned outages, inspections, and overhauls.

Operations and Supervision

The Operational Plan will require the following:

1. Operate the facility in accordance with the Operating Plan, Operations and Maintenance Manual, all applicable LORS and permits, and an approved annual budget and prudent industry standards.
2. Perform and record periodic operational checks and tests of equipment in accordance with approved maintenance procedures, the equipment manufacturer's specifications, and applicable laws and regulations.
3. Maintain operating logs, records, and reports for operation of the facility.
4. Coordinate scheduled shutdowns or other modifications in basic plant operations.

Ongoing Operations Training

The Project Owner will establish, implement, and conduct an ongoing operations training program. Staff will continue to receive training to maintain or improve plant reliability, availability, and capacity following Project startup.

Manufacturers' representatives and other sources of operations, maintenance, and overhaul literature will provide up-to-date information and techniques to the plant staff. Key staff members will also attend industry conferences and seminars to exchange information with other operators.

Maintenance Management Program

The Project will use a computerized maintenance/inventory management (CMIM) system. The key elements of the Project's maintenance/inventory systems will include:

- Preventive maintenance
- Predictive maintenance
- Corrective maintenance
- Augmentation schedule
- Outage management
- Spare parts inventory control

The control system will use a computerized maintenance management program to provide personnel with equipment histories, work orders, maintenance schedules, outage scheduling, inventory control, and equipment and person-hour costs.

Preventive Maintenance

Project preventive maintenance will consist of periodic equipment inspections and adjustments that will help avoid deterioration of facility performance. Preventive maintenance schedules will be included in the computerized monitoring program and will be calibrated to an overall schedule. This schedule will provide monthly and annual scheduling of necessary preventive maintenance activities and will include spare parts management.

Preventive maintenance schedules will be developed for particular pieces of equipment. The preventive maintenance schedules will be updated to reflect actual plant operating conditions, with adjustments made based on changes in key plant parameters. Equipment testing and monitoring will provide key data for the predictive maintenance component of the overall maintenance management program.

An integrated work order system will be used to schedule work and integrate the preventive maintenance into the overall maintenance management program.

Predictive Maintenance

Predictive maintenance generally improves the reliability/cost ratio and, subsequently, increases profitability by monitoring, recording, and evaluating performance systematically to develop a documented equipment and history. This history allows maintenance scheduling around critical components. Sensitive areas will receive extra attention from preventive maintenance personnel.

Corrective Maintenance

Corrective maintenance activities will return the equipment quickly to operating order. At regular discussion meetings, maintenance personnel will review and evaluate failures to avoid repeat failures. Review of the events preceding the failure allows determination of the exact causes; these findings will be fed back into the predictive maintenance model to determine whether additional or different maintenance procedures are warranted for the key components responsible for the failure.

Augmentation Schedule

The augmentation schedule shown in Section 2.2.3.1.2 ensures the sustained performance and reliability of the BESS by strategically adding new battery modules or upgrading key components at defined intervals. This approach accounts for expected battery degradation and aligns with operational and regulatory requirements, ensuring the system continues to meet capacity and performance targets throughout its entire lifecycle.

Outage Management

Outages for overhaul will be managed to minimize downtime through advanced planning, work packages, outage schedules, and other project management methods to allocate resources efficiently. Prior to each outage, the staff and the equipment manufacturers will conduct planned inspections beginning before the outage, depending on the need for and availability of major equipment components. Staff will work with vendor representatives to verify that the proper parts and tools are available, help coordinate inspections, and schedule work to be performed in the vendor repair shop.

A scheduling program using the critical path method will itemize various work packages, organize them, and calculate the effect any work package has on the overall outage length. The program will provide a reporting tool that allows the plant staff to create easy-to-understand outage schedules and reports showing workforce needs, equipment resources, and usage profiles. The program also will identify potential problems that could lead to schedule slippage.

Safety Program

To ensure the safety of all employees and personnel working in or near the Viracocha Hill BESS, the Applicant will establish a safety plan that conforms to federal, state, and local regulations. Key components of the plan will include:

- Site Familiarity: Employees are to be thoroughly familiar with Project operations and procedures, as well as the equipment being operated.
- Clearances: Written clearance procedures will be followed before working on or entering any equipment. No employee will work on any equipment that has been cleared for work unless the employee holds a clearance or is reporting to another employee who holds such clearance.
- Proper Equipment Designation: Equipment to be operated or worked on will be properly designated, by name and number.
- Responsibility: Operations and duties are performed only by duly authorized employees, who are held responsible for their actions.
- Monitoring: Employees will be required to maintain a continuing check on operating conditions to prevent a potential hazard to personnel and equipment. These include items such as: excessive

temperatures, over speeding of rotating equipment, abnormal noises, unusual vibration, malfunctioning of auxiliaries.

- Records: Employees who are required to keep logs and records will keep them current and maintain a high level of accuracy. Abnormal or special conditions will be called promptly to the attention of the proper supervisors and logged.

Plant Security

The Applicant will develop and implement a formal, written security plan and staff will be trained in its requirements.

2.3.3 Safety

2.3.3.1 Safety Precautions and Emergency Systems

Safety precautions and emergency systems will be included in the design and construction of the Viracocha Hill BESS to ensure safe and reliable operation of project facilities. Monitoring systems and a well-planned maintenance program will enhance safety and reliability.

Safety, auxiliary, and emergency systems consist of required lighting; battery backup for controls, fire, and hazardous materials safety systems.

2.3.3.1.1 Safety Precautions

Worker Safety

Programs will be in place to assure, at a minimum, compliance with federal and state occupational safety and health program requirements. In addition to compliance with these programs, ongoing implementation of a program that effectively self-assesses potential hazards and mitigates them routinely will minimize the Project's effects on employee safety.

Hazardous Materials Handling

Hazardous materials will be stored and used during construction and operation. Design and construction of hazardous materials storage and dispensing systems will be in accordance with applicable codes, regulations, and standards. Hazardous materials storage areas will be curbed or bermed to contain spills or leaks. Potential hazards associated with hazardous materials will be further mitigated by implementing a hazard communication program and thorough training of employees, including proper handling and emergency response to spills or accidental releases. Appropriate personal protective equipment also be provided.

Security

The Project will include an automated security system that will notify appropriate personnel. Firefighters and police will have access to the facility at all times.

Public Health and Safety

The programs implemented to protect worker health and safety also will benefit public health and safety. Facility design will include controls and monitoring systems to minimize the potential for upset conditions that may result in public exposure to hazardous materials. Potential public health impacts associated with operation of the Viracocha Hill BESS will be mitigated by development and implementation of an Emergency Response Plan, an employee hazards communication program, a Spill Prevention, Countermeasures, and Control Plan, safety programs, and employee training. Coordination will be made with local emergency responders by providing them with copies of the plant site Emergency Response

Plan (ERP), conducting plant site tours to point out the location of hazardous materials and safety equipment, and encouraging these providers to participate in annual emergency response drills.

2.3.3.1.2 Viracocha Emergency Systems

Fire Protection Systems

The Viracocha Hill BESS will have onsite fire protection systems and will be supported by local fire protection services. Portable and fixed fire suppression equipment and systems will be included in the Viracocha Hill BESS. Portable fire extinguishers will be located at strategic locations throughout the Project site. Smoke detectors, sprinkler systems, and fire hydrants with hoses will be used.

Employees will be provided with fire safety training, including instruction in fire prevention, use of portable fire extinguishers, and reporting fires to the local fire department. Employees will only suppress fires in an incipient stage. Fire drills will be conducted at least twice each year.

The Alameda County Fire Department Station 20 will provide the primary fire protection, inspections, and firefighting services for the Viracocha Hill BESS.

The Alameda County Fire Chief will perform a final fire safety inspection upon completion of construction and, thereafter, will conduct fire safety inspections. It is expected that, prior to startup, the County Fire Chief will visit the Viracocha Hill BESS site to become familiar with the site and with the plant's emergency response procedures.

Medical Services and Emergency Response

The Viracocha Hill BESS will have an Emergency Response Plan that will address potential emergencies, including chemical releases, fires, and injuries, and will describe emergency response equipment and its location, evacuation routes, reporting to local emergency response agencies, responsibilities for emergency response, and other actions to be taken in case of an emergency.

Employee response to an emergency will be limited to the awareness and first responder levels to minimize the risk of escalating the accident or injury. Training consistent with these response levels will be provided to employees. A first aid station with adequate first aid supplies and personnel qualified in first aid treatment will be provided onsite.

The Alameda County Fire Department has the primary responsibility for dispatching emergency medical technicians (EMTs). Backup EMT units are available from Mountain House Fire Station No. 1. They will respond to medical emergencies at the plant based on availability. Ambulances will be dispatched from Alameda County Fire Department Station 20. The nearest hospital is in Sutter Tracy Community Hospital; however, it is anticipated burn patients would be transported to the Santa Clara Valley Medical Center Burn Center, or similar, via helicopter.

2.3.3.1.3 Aviation Safety

The closest airport (Byron Airport) to the Project site is approximately 4 miles north in Contra Costa County. The airport is a public airport used for general aviation and is a popular base for skydivers, gliders and other recreational flight activities. There is no runway lighting or control tower service.

2.4 Energy and Efficiency

As detailed in Section 2.2.3.1, construction is anticipated to begin in the second quarter 2026 and run for 14 months. Details on the construction schedule and workers shifts can be found in Table 2-3. Once constructed and operational, the 362.8-MW-hr Viracocha Hill BESS facility will store energy and release it to the grid when electricity demands are high. The facility is capable of operation seven days per week, 24 hours per day over the course of its 25-year operating life.

During operations, the facility will require routine maintenance and repair, necessitating O&M staff to be onsite periodically. As the batteries degrade and lose storage capacity, they will be replaced, which may require installing new foundations, BESS and electrical equipment, all within the existing footprint.

2.5 Cumulative Impacts

Cumulative impacts are defined in the CEQA Guidelines (Section 15355) as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from a "change in the environment which results from the incremental impact of the Project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time." Consistent with CEQA Guidelines Section 15130(a), the discussion in this EIR focuses on the identification of any significant cumulative impacts and, where present, the extent to which the proposed Project would constitute a considerable contribution to the cumulative impact. CEQA Guidelines Section 15130(b) states the following:

> "The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great of detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact."

Requests for information pertaining to past, present, and reasonably foreseeable future projects were submitted to the appropriate agencies and interested parties in December 2024 and are summarized in Table 2-7. Attachment 2X includes the agency requests and responses.

Table 2-7. Cumulative Project Request - Summary of Responses

Agency/Interested Party	Date of Response	Response
Alameda County Planning Department	No response received.	No response received.
Alameda County Public Works Agency (ACPWA)	No response received.	No response received.
Bay Area Air Quality Management District (BAAQMD)	No response received.	No response received.
Planning Division of the City of Tracy	December 3, 2024	There are no major development related to the City of Tracy within 6 miles of the project. The city is approximately 11 miles east of the San Joaquin County border. City planner suggested investigating city of Mountain House projects because it is farther west and may be within the project footprint.
San Joaquin Valley Air Pollution Control District	December 12, 2024	There are currently no major projects west of the city of Tracy within the air basin.
Planning Division of San Joaquin County	No response received.	No response received.
Contra Costa County Department of Conservation and Development	December 11, 2024	After reviewing the list of projects produced from desktop research, County planner confirmed no additional projects are planned in the county.

Agency/Interested Party	Date of Response	Response
California Independent System Operator (CAISO)		CAISO provided a link to a Generation Queue Report that includes a list of projects by county/utility. A total of 12 projects are in Alameda County, 9 are in Contra Costa, and 12 are in San Joaquin County; however, the specific locations of the projects could not be provided.

To identify the projects to be analyzed in the evaluation of cumulative impacts, CEQA Guidelines Section 15130(b) requires that an EIR employ either:

- The List Approach – entails listing past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside of the control of the agency; or
- The Projection Approach – uses a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact.

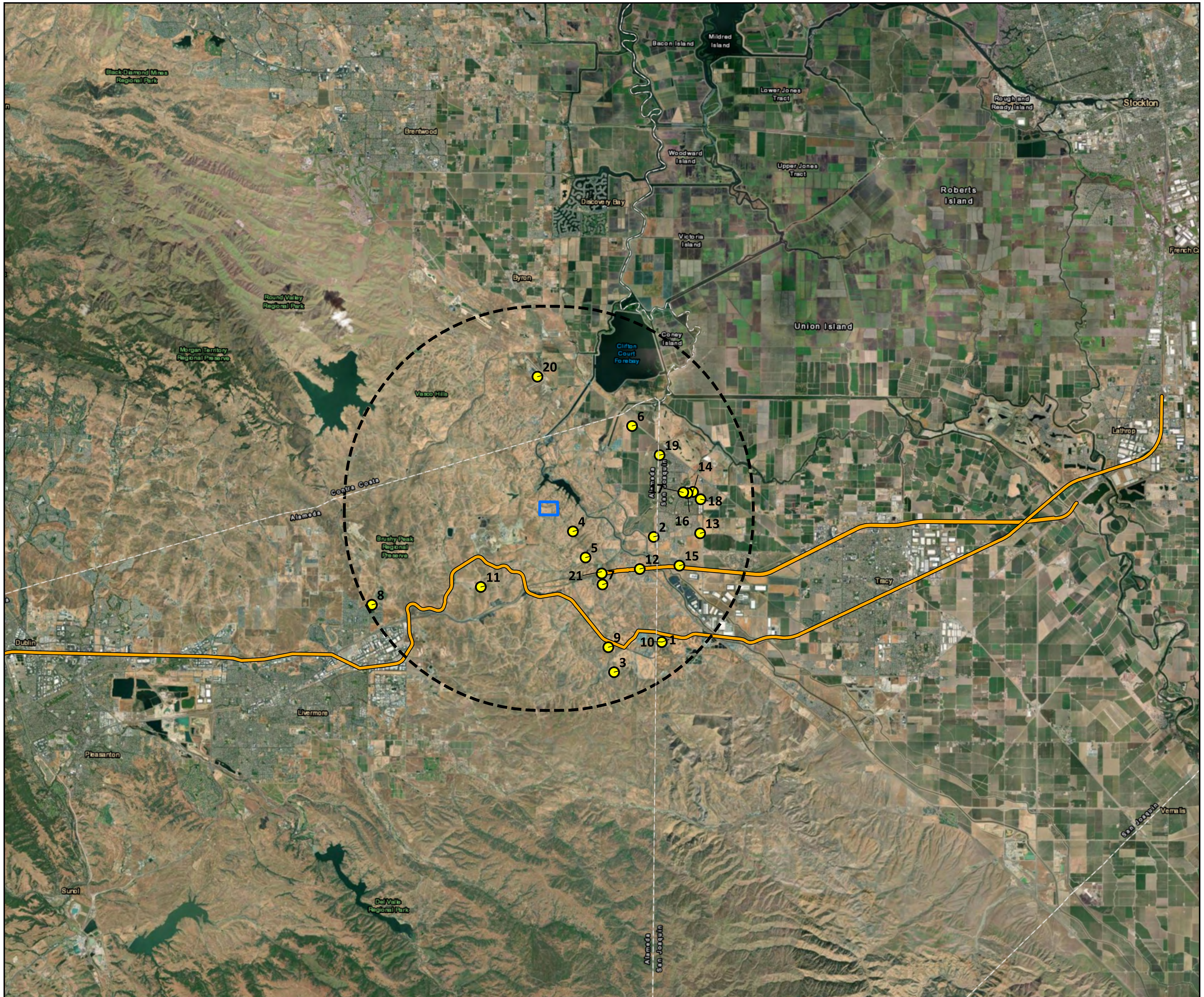
The approach and geographic scope of the cumulative impact evaluation vary depending on the environmental topic area being analyzed. The individual cumulative impacts discussion in the section addressing each environmental topic presents impacts and mitigation measures for the proposed Project. Each impact begins with a summary of the approach and the geographic area relevant to that environmental topic area. For most environmental topic areas, the list approach is used. The list of potentially relevant projects, a detailed methodology, and relevant planning documents are considered in each cumulative impact discussion.

Past projects include those land uses that have been previously developed and comprise the existing environment. Present projects include those projects recently approved or under construction. Probable future projects are those that are reasonably foreseeable, such as those for which an application is on file and in process with a local planning department. The cumulative projects listed in Table 2-9 have been determined to be reasonably foreseeable. These projects are considered in the cumulative impact analysis as appropriate. Refer to Figure 2-6, Cumulative Projects, for the location of each project considered.

Table 2-9. Cumulative Projects

Figure Reference	Project Name	Project Coordinates	Project Type	Project Status
Alameda County				
1	Griffith Energy Storage Project PA-2200137	37°42'35.94"N 121°33'14.39"W	Energy	Under review- public comment period ended 10/11/2023
2	Grant Line Solar	37°45'24.3"N 121°33'33"W	Energy	Unknown – State Review period ended 11/19/2021
3	Mulqueeny Ranch Wind Repower	37°41'46.86"N 121°34'49.84"W	Energy	Approved
4	Sand Hill Wind Project	37°45'31.53"N 121°36'16.11"W	Energy	Approved
5	Altamont Pass Wind Resource Area Repower	37°44'50N 121°35'50W	Energy	All sections approved- some sections operational

Figure Reference	Project Name	Project Coordinates	Project Type	Project Status
6	CalSun Solar Project	37°48'21.5"N 121°34'19.2"W	Energy	Unknown
7	Jess Ranch Compost Facility	37°44'7.09"N 121°35'15.19"W	Industrial	Approved
8	Garaventa Hills Project	37°43'30.0"N 121°43'00.0"W	Residential	Under review
9	Potentia-Viridi Battery Energy Storage System	37°42'26.73"N 121°35'1.95"W	Energy	Under review
10	KOLA Energy BESS	37°42'36.02"N 121°33'14.41"W	Energy	Under review
11	Rooney Ranch Wind Repowering Project	37°44'0.85"N 121°39'20.57"W	Energy	Approved
San Joaquin County				
12	I-205 Highway Widening	37°44'32.57"N 121°34'0.31"W	Roadway	Under construction – scheduled for completion in 2025
13	Mustang Square Commercial Center	37°49'38.76"N 121°37'31.44"W	Commercial	Approved
14	Aviara Apartments	37°46'37.14"N 121°32'14.66"W	Residential	Under Review
15	Grupe Apartments	37°44'38.73"N 121°32'40.46"W	Residential	Under Review
16	Vida Apartments	37°46'35.01"N 121°32'25.68"W	Residential	Under Review
17	106 residential lots	37°46'36.18"N 121°32'34.24"W	Residential	Under Review
18	143 residential lots	37°46'25.41"N 121°31'59.14"W	Residential	Under Review
19	81 residential lots	37°47'35.38"N 121°33'22.96"W	Residential	Under Review
Contra Costa County				
20	Byron Airport Development Program	37°49'44.16"N 121°37'33.96"W	Commercial	Approved
Cross County – San Joaquin and Alameda				
21	Valley Link Project	37°44'15.10"N 121°36'45.09"W	Rail	Construction set to begin in 2025



Legend

- Project Survey Boundary
- Project Study Area 6-mile Buffer
- Projects within 6 Miles
- Linear Project within 6 Miles

Source:
1) ESRI Aerial Images

N

0 5 10
Miles

Figure 2-6
Cumulative Resources
Viracocha BESS Project
Alameda County, California

Jacobs

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2.6 Applicable Laws, Ordinances, Regulations, and Standards

Refer to Appendix 2A for a detailed discussion of applicable LORS for engineering design criteria.

2.7 References

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Tri-valley Regional Rail Authority. 2024 Valley Link. Accessed at https://www.valleylinkrail.com/valleylink-project, on December 3, 2024.

3 Electrical Transmission Line

Pacific Gas and Electric Company (PG&E) will construct, own, operate, and maintain the network transmission upgrades required for Viracocha Hill Battery Energy Storage System Project (Viracocha BESS or Project) to deliver through PG&E's balancing authority to the California Independent System Operator (CAISO), downstream of the Point of Change of Ownership (PCO), located at the Point of Interconnection (POI). The Applicant plans to own and maintain the generation interconnection gen-tie line to route from Viracocha Hill BESS to the first POI within PG&E's balancing authority. The Point of Interconnection will be at the Kelso-Tesla 230-kilovolt (kV) line via the existing Ralph Substation adjacent to the Viracocha Hill BESS site approximately 1,325 feet away. If adding an additional bay to the Ralph Substation is unfeasible, a new switching station or line-tap will be built to the east of the POI. The Applicant plans to engineer, construct, own, operate, and maintain the gen-tie line between the proposed Viracocha Hill BESS generator step-up transformer and the POI at the proposed privately owned 230-kV Ralph Substation.

3.1 Gen-Tie Line Specifications

The gen-tie line from the Viracocha Hill BESS to the first POI will be designed and constructed in accordance with Rules for Overhead Line Construction and other applicable state and local codes. General Order 95 (GO-95) describes a minimum conductor distance from the ground of 30 feet at 60°F, and 27 feet at maximum operating temperature. The proposed transmission conductor heights would be consistent with GO-95.

Gen-tie conductors would consist of one 3-phase AC circuit consisting of one or two 1-inch Aluminum Conductor Steel Reinforced (ACSR) conductors per phase. One shield wire with an integrated fiber optic cable will be installed with any new gen-tie line associated with the Project. The fiberoptic cable will be used for any necessary communications within PG&E's transmission system.

Part of standard construction prior to conductor installation involves measuring the resistance of the structure footings. If the resistance to the remote earth for each structure is greater than 25 ohms, additional ground rods are installed as necessary to lower the resistance below 25 ohms.

3.2 Gen-tie Transmission Structures

The gen-tie will be installed on three single-pole steel structures ranging from 100 feet to 125 feet high spaced approximately 400 to 600 feet apart, depending on final design. The phase conductors will be arranged vertically on three side arms for each circuit. Figure 3-1 provides an example of a typical tower design.

All steel pole towers will have concrete foundations designed to support the imposed loads. The diameter and the depth of each foundation will be determined during the design phase of construction and will be based on soil conditions and actual tower loads. The maximum anticipated size of the foundation is 10 feet in diameter by 30 feet deep. Excavations for foundations would be made with drilling equipment. A vehicle-mounted power auger or backhoe would be used to excavate for the structure foundations.

Footings will be installed by placing reinforcing steel and an anchor bolt cage into each foundation hole, positioning the bolt cage, and encasing it in concrete. Spoil material would be used for fill where suitable. Spoil materials that cannot be used for fill would be removed to a suitable location by the construction contractor for disposal. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks.

3.2.1 Access to Structures

The construction, operation, and maintenance of the proposed gen-tie line to the first POI will require that heavy vehicles access structure sites along the right-of-way (ROW). Some permanent improvements may be left in place where necessary for operation or maintenance, or where the property owner requires.

3.2.2 Viracocha Hill BESS Transmission System Evaluation

The Applicant submitted a Material Modification Assessment (MMA) to CAISO and PG&E requesting a change of the generation technology, from wind to battery storage, to the Reclaimed Wind (Q1461) Large Interconnection Generation Agreement. CAISO and PG&E assessed the proposal and completed a Modification Request Report (MRR) (see Appendix 3.2A). As shown in the MRR, PG&E performed a technical analysis associated with this modification request, examining the impact from Viracocha Hill BESS to the grid and other projects later in the queue. The MRR used power flows on the existing transmission lines, transformers, short circuit duties of the existing transmission facilities, substations, and stability of the interconnected system, considering various contingencies and fault conditions, which determined that revised Network Upgrades are required. The MRR approved the change and identified the necessary reliability Network Upgrades (PG&E system upgrades) required to be in place prior to Viracocha Hill BESS connecting to the PG&E transmission system. The required Network Upgrades are described in the MRR and provided as a confidential filing. When the Network Upgrades are implemented, the addition of Viracocha Hill BESS and related gen-tie will increase operator flexibility for maintaining the transmission system during steady state and contingency conditions. The one-line diagram for the Project is provided as Figure 3-2.

3.2.3 Transmission System Reliability Criteria

The North American Electric Reliability Council, the Western Electricity Coordinating Council, and the PG&E Reliability Criteria for Transmission System Planning were used in the evaluation of the transmission system.

3.2.4 Transmission System Interconnection Study

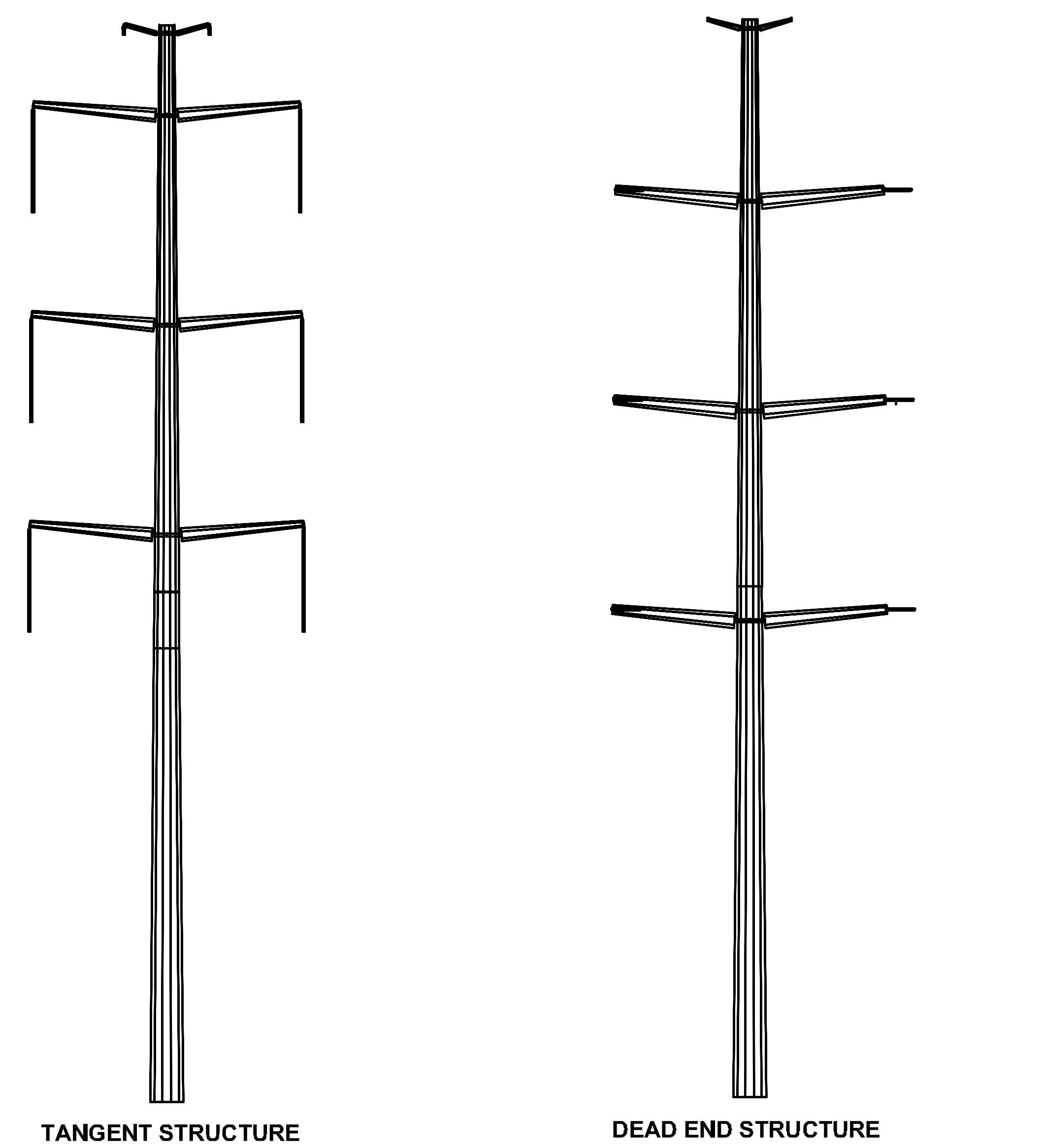
The MMR indicates that the proposed Project can be connected to the PG&E transmission system at the POI through the privately owned Ralph Substation immediately adjacent to the Project. If it is unfeasible to expand the Ralph Substation, a new switching station or a line-tap will be built approximately 230 feet to the east of the plant.

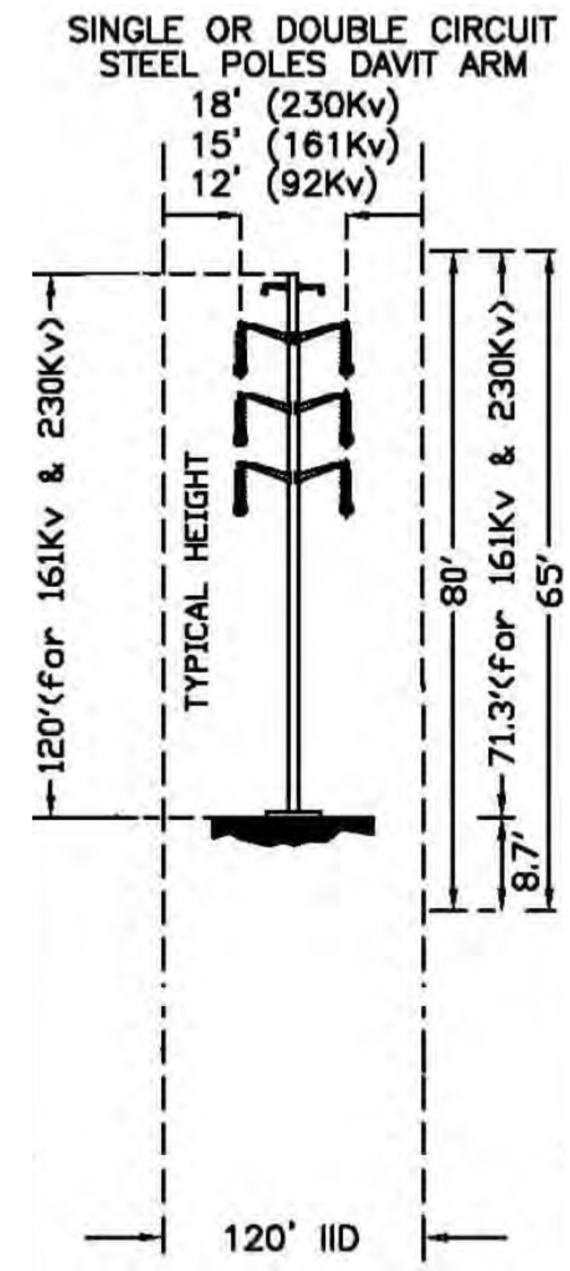
3.3 Audible Noise and Radio and TV Interference

An electric field is generated in the air surrounding a transmission line conductor when the transmission line is in operation. A corona discharge occurs at the conductor surface when the intensity of the electric field at the conductor surface exceeds the breakdown strength of the surrounding air. The electrical energy released from the conductors during this process is known as corona loss and is manifested as audible noise and radio/television interference.

Energized electric transmission lines also can generate audible noise by a process called corona discharge, most often perceived as a buzz or hum. This condition is usually worse when the conductors are wet. The Electric Power Research Institute (EPRI) has conducted several transmission line tests and studies that measured sound levels for several power line sizes with wet conductors (Transmission Line Reference Book, 345 kV and Above, EPRI, 1975,1982). The Transmission Line Reference Book, 345 kV and Above, also notes that the noise produced by a conductor attenuates (decreases) by two to three decibels for each doubling of the distance from the source.

Radio and TV interference, known as gap-type noise, is caused by a film on the surface of two hardware pieces that are in contact. The film acts as an insulator between the surfaces. This results in small electric arcs that produce noise and interference. This type of noise is not a problem in well-maintained transmission lines.



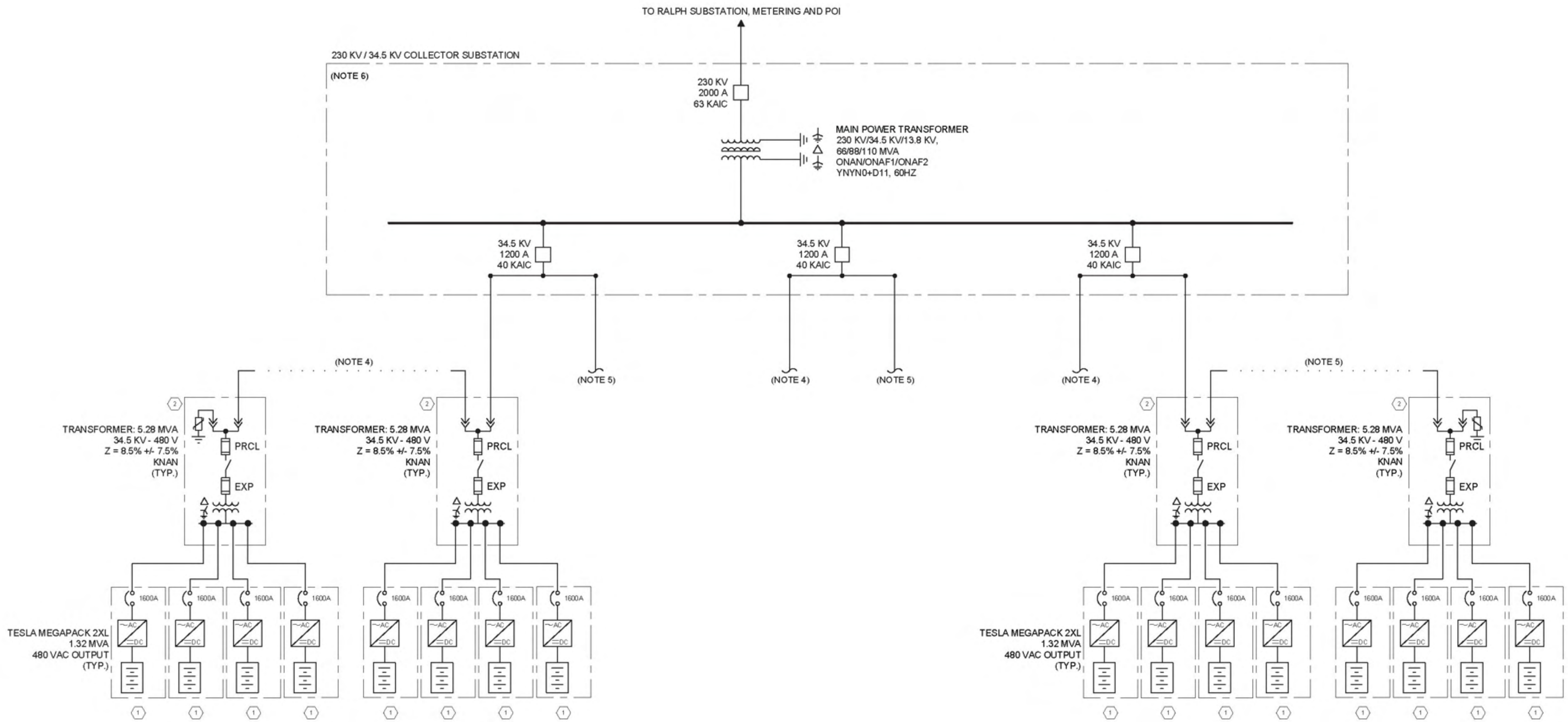


230kV Steel Pole
Typical Right of Way

Figure 3-1
Typical Transmission Tower Design, Viracocha Hill BESS Project
Alameda County, CA

Source: Z Global Engineering, 11/30/2022.

Jacobs



FOR PERMITTING PURPOSES ONLY

02/10/2025

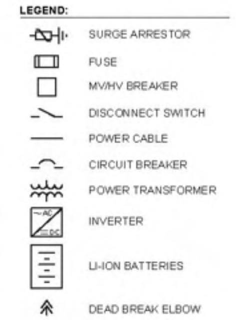
SYSTEM DESCRIPTION	
NAMEPLATE MW / MWH AT POI +/- 0.95PF	90.70 MW / 362.80 MWh

MATERIAL LIST		QTY.
1	TESLA MEGAPACK 2XL, EC24, P132. EACH ENCLOSURE CONTAINS 3916.8 KWH OF USABLE ENERGY AT SITE ACCEPTANCE TEST. EACH ENCLOSURE IS RATED 1.32 MVA.	108 (BOL) 144 (EOL)
2	MEDIUM VOLTAGE TRANSFORMER: 5.280 MVA, 34.5 KV (DELTA) - 480 V (WYE GROUNDED), Z = 8.5% +/- 7.5%, KNAN, FR3 NATURAL ESTER FLUID FILLED.	27 (BOL) 36 (EOL)

NOTES:

1. THIS DRAWING REPRESENTS ONE PROPOSED ARRANGEMENT AND IS SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. THIS DRAWING IS CONCEPTUAL IN NATURE AND IS FOR PLANNING PURPOSES ONLY. EQUIPMENT QUANTITY, LOCATION, AND RATING TO BE CONFIRMED DURING DETAILED DESIGN.
3. POWER EXPORT AT INVERTERS WILL BE CONTROLLED BY ENERGY MANAGEMENT SYSTEM TO MEET REAL AND REACTIVE POWER REQUIREMENTS AT POI.
4. STRING CONTAINS 5 BLOCKS OF 4 MEGAPACKS (BOL). STRING CONTAINS 6 BLOCKS OF 4 MEGAPACKS (EOL).
5. STRING CONTAINS 4 BLOCKS OF 4 MEGAPACKS (BOL). STRING CONTAINS 6 BLOCKS OF 4 MEGAPACKS (EOL).
6. SUBSTATION MV AND HV BREAKER SHORT CIRCUIT RATINGS ARE SUBJECT TO CHANGE BASED ON AVAILABLE GRID FAULT DATA AND FINAL BREAKER OEM SELECTION.
7. THE SITE IS DESIGNED FOR AC AUGMENTATION AT A LATER DATE.
8. SITE AUXILIARY POWER TO BE DETERMINED IN DETAILED DESIGN.
9. TWO INDEPENDENT PATHS OF FIBER COMMUNICATION NOT ILLUSTRATED.
10. REVENUE METERING ASSUMED AT POI.

LEGEND:



ABBREVIATIONS:

- BESS - BATTERY ENERGY STORAGE SYSTEM
- BOL - BEGINNING OF LIFE
- EOL - END OF LIFE
- EXP - EXPULSION (FUSE)
- LI-ION - LITHIUM IRON PHOSPHATE
- PF - POWER FACTOR
- POI - POINT OF INTERCONNECTION
- PRCL - PARTIAL RANGE CURRENT-LIMITING (FUSE)
- TYP - TYPICAL

HOLD

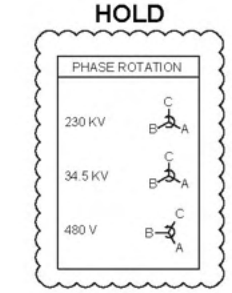


Figure 3-2
One-Line Diagram
Viracocha Hill BESS Project
Alameda County, California

Source: BURNS & MCDONNELL 177321_SALKA_ENERGY_VIRACOCHA_HILL_BE EE001.DWG

Jacobs

There are many factors contributing to the pre-Project ambient noise levels in the area. The Project gen-tie will be designed such that noise from the line will continue to be well below undesirable levels. Any noise or radio/TV interference complaints will be logged, investigated, and, to the degree possible, mitigated.

3.4 Induced Currents and Hazardous Shocks

Touching metallic objects near a transmission line can cause hazardous or nuisance shocks if the line is improperly constructed. Because the electric fields of the gen-tie are negligible above ground, and the line would be built consistently with GO-95 requirements and Title 8 CCR 2700 requirements, hazardous shocks are highly unlikely to occur as a result of the Project construction and operation.

3.5 Electric and Magnetic Fields

Electric and magnetic fields (EMFs) occur independently of one another as electric and magnetic fields at the 60-Hz frequency used in transmission lines, and both are created by electric charges. Electric fields exist when these charges are not moving. Magnetic fields are created when the electric charges are moving. The magnitude of both electric and magnetic fields fall off rapidly as the distance from the source increases (proportional to the inverse of the square of distance). Power lines, electrical wiring, electrical machinery, and appliances produce EMFs.

Transmission lines generate electric fields because of unbalanced electrical charge on unshielded energized conductors. Electric field strengths are expressed in volts per meter (V/m) or kilovolts (thousands of volts) per meter (kV/m). When electric currents are in motion, they create magnetic fields. The strength of the magnetic field is proportional to the magnitude of the current in the circuit. Magnetic fields can be characterized by the force they exert on a moving charge or on an electrical current. A magnetic field is a vector quantity that is characterized by both magnitude and direction. Electric currents are sources of magnetic fields. Magnetic field strengths are measured in milligauss (mG).

In January 1991, the California Public Utilities Commission (CPUC) issued an Order Instituting Investigation (I.91-01-012, CPUC 1991) into the potential health effects from electric and magnetic fields emitted by electric power and cellular telephone facilities. In September 1991, the assigned CPUC Administrative Law judge issued a ruling that created the California EMF Consensus Group. This group of representatives from utilities, industry, government, private and public research, and labor organizations submitted a document titled *Issues and Recommendations for Interim Response and Policy Regarding Power Frequency EMFs* on March 20, 1992 (California EMF Consensus Group 1992). Regarding the relevant policy consensus recommendation titled Facility Siting, the group stated that the CPUC should recommend that utilities take public concern about electromagnetic fields into account when sitting new electric facilities. Although this group could not conclude that there is a relationship between EMF and human health effects, they also could not conclude that this relationship does not exist to any extent; therefore, they recommended that the CPUC authorize further research.

California does not currently have a regulatory level for magnetic fields. However, the values estimated for the Project are well below those established by states that do have limits. Other states have established regulations for magnetic field strengths that have limits ranging from 150 to 250 mG at the edge of the ROW, depending on voltage. The CEC does not currently specify limits.

3.5.1 Calculation Methods

The EMF effects were calculated at multiple points within the ROW of each transmission configuration using CDEGS software engineering module SES Enviro plus, environmental impact analysis tool version 17.1.9978 by Safe Eng Services & Technologies Ltd. Transmission line configurations that would be installed as part of the Viracocha Hill BESS were evaluated and provided under a request for confidentiality as Appendix 3B.

All calculations were performed at midspan locations (points of greatest line sag), 1 meter above ground level, and in the line's center passing through the tower center, and four meters off the tower center below the phase wires, based on the line geometries, conductor type, phasing, nominal voltage, and maximum expected current loading.

3.6 References

California EMF Consensus Group. 1992. Issues and Recommendations for Interim Response and Policy Addressing Power Frequency Electric and Magnetic Fields (EMFs). March.

Electric Power Research Institute. 1982. Transmission Line Reference Book, 345 kV and Above.

4. Mandatory Opt-in

Section 4 Mandatory Opt-in is not included in this Application and will be submitted in second quarter 2025.

5. Environmental Analysis

This chapter contains 16 individual sections. The sections represent the standard environmental, public health and safety, and local impact assessment disciplines for which the California Energy Commission (CEC) Energy Facilities Siting Regulations (Title 20, California Code of Regulations, Section 1704, Appendix B) require information in an Opt-In Application. Most of the sections use a standardized format containing the following headings and associated content:

- **Affected Environment** includes relevant background information about the Viracocha Hill Battery Energy Storage System's (Viracocha Hill BESS or Project) environmental, social, and regulatory settings.
- **Environmental Analysis** addresses the potential environmental consequences of the construction and operation of the Project. The section begins with a list of the criteria used to determine whether environmental effects of the Project qualify as significant adverse environmental impacts.
- **Cumulative Effects** discusses potential effects of the Project that are not significant adverse impacts individually, but which could reach significance cumulatively in combination with other projects in the area.
- **Mitigation Measures** describes any mitigation measures necessary to reduce potential impacts to a level less than the level of significance.
- **Laws, Ordinances, Regulations, and Standards (LORS)** lists those items that pertain to the Project for a given discipline and includes a demonstration that the Project, as designed, would comply with all applicable LORS.
- **Agencies and Agency Contacts** is a list of federal agencies with permitting authority over the Project, and state and local regulatory agencies that would have such permitting authority, except for the exclusive purview of the CEC. This section also contains a list of regulatory agency staff and their locations.
- **Permits and Permit Schedules** identifies applicable permits and their schedules.

5.1 Air Quality

Section 5.1 Air Quality is not included in this Application and will be submitted in second quarter 2025.

5.2 Biological Resources

Section 5.2 Biological Resources is not included in this Application and will be submitted in second quarter 2025.

5.3 Cultural Resources

This section discusses the potential effects of the Viracocha Hill Battery Energy Storage System (Viracocha Hill BESS or Project) on cultural resources in the Project area and vicinity. Section 5.3.1 describes the cultural resources environment that might be affected by the Project. Section 5.3.2 provides the research design used to guide the records and archival search and subsequent fieldwork phase of the cultural resource inventory. Sections 5.3.3 and 5.3.4 present the methods and results of the aforementioned record and archival search, tribal outreach, historical society consultation, and fieldwork. Section 5.3.5 presents an environmental analysis of construction and operation. Section 5.3.6 presents mitigation measures that will be implemented to avoid construction impacts. Section 5.3.7 discusses the laws, ordinances, regulations, and standards (LORS) applicable to the protection of cultural resources. Section 5.3.8 lists agencies and agency contacts. Section 5.3.9 discusses permits and schedule. Section 5.3.10 lists reference materials used in preparing this section.

This section covers the cultural resources assessment necessary to file an Opt-In Application under Assembly Bill (AB) 205 with the California Energy Commission (CEC). The cultural resources inventory was conducted in compliance with Section 5024.1 of the California Public Resources Code (PRC) to identify archaeological, historical, or tribal resources in the Project area. Cultural resources and tribal cultural resources together comprise objects, buildings, structures, sites, features, areas, places, records, sacred places, cultural landscapes, or manuscripts, all of which may have significance according to criteria outlined in Sections 21074 and 21084.2 of the PRC.

Per CEC Data Completeness requirements, Confidential Appendix 5.3A provides the cultural resources technical report (CRTR), including names and qualifications of personnel who contributed to this study; archival research material consisting of a complete copy of the California Historical Resources Information System (CHRIS) literature search results that include maps showing the locations of previous cultural resources studies and resources and California Department of Parks and Recreation (DPR) 523 forms for previously recorded resources occurring within a records search area (1-mile radius buffer around all Project facilities); copies of correspondence with the Native American Heritage Commission, Native American groups, and local historical societies; a map showing the location of the study area and all identified cultural resources within the study area; DPR 523 forms for newly recorded and updated resources, and copies of all reports that are either partially or entirely located within 0.25 mile of the Project area, or include architectural surveys or archaeological excavations within 1 mile of the Project area.

Archaeological and architectural history survey areas for the proposed Project were developed as follows. The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

The archaeological survey area includes the BESS site and the proposed alternate substation area, which totals approximately 18.7 acres; a 200-foot buffer around the BESS site, which totals 37.5 acres; and the proposed linears plus a 50-foot buffer on either side of each corridor, as well as the 0.15 acre road improvement area. The total archaeological survey area is 52.2 acres. The architectural survey area includes the BESS site, the proposed alternate substation, the gen-tie corridor, and, because the Project is in a rural setting, a 0.5-mile radius buffer around these locations. The architectural survey area includes all or part of the following Assessor's Parcel Numbers (APNs): the BESS site parcel, 99B-7300-1-4; and adjacent parcels, 99B-7020-5, 99B-7350-1, 99B-7350-2-5, 99B-6175-1-1, 99B-6175-2-3, 99B-7375-1-1, and 99B-7375-1-7.

A wider review of the Altamont Pass, as a geographical region, was completed to identify tribal cultural resources that could be affected by the Project. This ethnographic review area included any parts of the Altamont Pass that could potentially be visible from the Project area. It roughly extended 5 miles to the west of the Project area, where Brushy Peak, at an elevation of 1,703 ft above mean sea level (AMSL), is visible from several lower areas within the Altamont Pass. It reaches to the Bethany Reservoir on the east of the Project area, where any viewshed would be blocked from the Project area by the reservoir. To the south and north, the ethnographic review area falls within the 1-mile study area, as the visibility of Project area in these two directions is low, due to the hilly terrain, and lack of tall peaks in either direction.

5.3.1 Affected Environment

The Project area is located in the Altamont Hills near Mount Diablo of the central Coast Ranges and eastern portion of the Bay Area bordering the San Joaquin Valley. It is composed mostly of dry and rugged rolling hills and valleys with a Mediterranean climate with an average annual precipitation of 14.9 inches. Average temperatures range from a low of 45.6 degrees to a high of 73.2 degrees Fahrenheit (U.S. Climate Data 2024). There are few trees that were planted in the historic and modern eras, and sparse patches of coast live oak and valley oak and California buckeye dot the surrounding landscape. The hilly topography is steeply inclined in some areas, and the highest point is 1,009 feet above mean sea level. There are intermittent streams and washes with a few ponds near the Project area.

5.3.1.1 Paleoenvironment

Many discussions of Holocene paleoenvironments that likely influenced prehistoric cultural response and adaptive strategies in the region have relied on Antevs's tripartite scheme, and on the later work of Haynes (1967) and Mehringer (1967). These researchers postulate a relatively cool and wet transition from the Late Pleistocene followed by a warming trend climaxing in a Middle Holocene hot and dry interval beginning about 8,000 years ago. Around this time, the vegetation becomes similar to that of today (Van Devender et al. 1987). Recent work by Wigand and Rhode (2002) has added significant detail to these environmental reconstructions. All of the records indicate the presence or absence of summer precipitation was an important factor influencing the structure of local vegetation communities.

Data suggest the Middle Holocene was a time when drought conditions, including warmer temperatures and decreased precipitation, were the norm. A return to cool temperatures and winter rainfall marks the Early Late Holocene (5,500 to 2,000 years ago). The return of drought conditions following the cold/wet interval of the Neopluvial mark the Late Holocene (Wigand and Rhode 2002).

Approximately 2,000 years ago, both summer precipitation and increased cyclic variability became the dominant patterns. Characteristic of this cyclic variability were generally dry or warm/wet conditions punctuated by periods of cool/wet on the scale of tens or hundreds of years. The intensity and rapidity of climatic fluctuations during the Late Holocene are the primary characteristics of the last 2,000 years. These punctuated changes undoubtedly had significant effects on vegetation, landform response, and local adaptive strategies (Wigand and Rhode 2002).

5.3.1.2 Geology and Soils

The geology of the Project area and surrounding landscape is mapped by Dibblee and Minch (2006) as dominantly late Cretaceous Panoche Formation sandstone (Kps) and mudstone or claystone (Kp) bedrock that was deposited as clastic marine sediments in shallow to deep marine fluvio-marine channels during the late Cretaceous. Subsequent to deposition and lithification, the bedrock units were uplifted, folded, faulted and warped into alternating synclines and anticlines. The sandstone unit Kps is typically lighter colored than the Kp unit, and contains large, brown concretions that are more resistant to weathering due to their iron content. The folding and faulting of the Panoche bedrock has increased the rock's tendency to become exposed during erosion on steep slopes and ridge shoulders. The Project area is located within the axis of a broad anticlinal fold in which the west dipping bedrock units are located near the western border of the Project area and the east dipping bedrock units are located near its eastern border. The central axis portion of the Project area has been heavily weathered, which has produced a more rounded and undulating landscape that is controlled by variable erosion rates of sandstone, mudstone, and conglomerates. The slopes of the ridges produced by folding and faulting has allowed massive sandstone bedrock units to be exposed by erosion. Once exposed, the large outcrops were initially surface armored by iron oxides.

Over time, the forces of wind, water, chemical and biogeochemical weathering opened small pockets through the armored exterior, exposing the softer and less weather-resistant interior of the bedrock. These small pockets expanded in size to become honeycomb weathering structures (tafone), but also large openings to form caves, rock shelters, and vernal pools (bedrock cisterns) that now dominate the landscape seen today. These features are located on the landscape surrounding (but outside of) the Project area.

The bedrock units of the Panoche consists of alternating beds of sandstone and mudstone that are soft to fairly well indurated and are typically non-fossiliferous. The Panoche is overlain by isolated lenses and facies of Miocene age Orinda formation Sandstone, which consists of poorly sorted sandstone to pebbly sandstone that was deposited in a marine nearshore (paralic deposits) environment. The unit is considered highly fossiliferous (Dibblee and Minch 2006). Other bedrock units within the Project area are pebble to boulder conglomerates that are noted in the northernmost portion of the Project area, near the Alameda and Contra Costa counties border. Conglomerates are typically weather-resistant, ridge-forming bedrocks, and as such the northern area is higher in the Project area due to the weathering resistance of these rocks. Smooth rounded pebbles and cobbles litter the landscape in areas where the conglomerates are exposed and have weathered.

The soils within the Project area are formed in the bedrock discussed in the previous paragraph. Given this, the soils exhibit textures that correlate to the underlying bedrock. For instance, the soils formed above sandstone are typically well-drained sandy loams, whereas the soils formed over mudstone are typically poorly drained clayey loams. Soils are very shallow overlying the conglomerates in the area, which may be due to the high silica content in the quartzite rich bedrock, which may also make a rather impenetrable bedrock for roots to penetrate. The soils within the Project area are also correlated to slope. The soils on ridgetops and slopes are typically shallow and colluvial in nature, whereas the soils of the valley bottoms are thick and stacked due to the accumulation of sediments eroded (Hortonian overland flow, washes, and rills) from the surrounding hills. Additionally, the area is prone to wildfires, which may cause the soils to be hydrophobic, creating an increased sheet wash effect.

The Project area is located within a broad anticlinal fold that has developed narrow ridges with steep slopes in the uplands, and moderately flat valleys in between. The soils vary from sandy loams (formed from weathered sandstone) to silty and clayey loams (formed from weathered mudstone). The clayey soils are subject to forming desiccation cracks, and sandy soils are subject to wind erosion during dry seasons. This geologic setting of narrow ridges with steep slopes also results in the poor development and stability of soils on the ridge crests and shoulders, yet well-developed and stable soils developed on the valley floors. The geomorphology of this landscape also shows that decades of cattle and sheep grazing, and previous wind energy development has enhanced erosion processes on ridges, where soils have eroded off the ridges and redeposited on the lower ridge slopes and/or valley floors. Additionally, seasonal wildfires may reduce surface vegetation that may also increase soil erosion and hydrophobicity. Thus, the geology of narrow ridges with steep slopes, the geomorphology of poor soil development, and effects of agricultural and energy practices that have increased the erosion process have resulted in either thin or absent surface soil horizons where only subsoil remains, or no soils where bedrock is exposed.

The Project area is predominantly located on ridge crests where the soils are thin or absent. Given the processes discussed earlier, the absence of surface or buried features is expected, and artifacts, if present, will likely be only the artifacts with enough size and weight to not be horizontally displaced by erosion (Horton overland flow/sheet wash) during rain events, or large enough not to be vertically displaced by desiccation cracks of expansive (clayey) soils during dry periods, or burrowing animals. The preceding discussion suggests that larger stone artifacts, such as hammerstones, bifaces, groundstone, or fire-altered rocks have a higher likelihood of being present within the Project area than smaller items such as debitage, bone. Remnants of features and intact archaeological deposits are not anticipated.

5.3.1.3 Current Land Use

The Project is located in a hilly area among a patchwork of ranches that have been grazed by cattle and sheep since the 1870s. Development within this area includes the Interstate 580 (I-580) corridor, Pacific Gas and Electric (PG&E) substations and electrical towers, and wind energy facilities. Wind farms located in the Altamont Pass Wind Resource Area, and near the Project, include the Golden Hills wind farm, the Golden Hills North wind farm, and the Summit Wind wind farm (Alameda County Community Development Agency, 2023a). The land in the Project area, as well as the surrounding vicinity, is still grazed by cattle. The PG&E Ralph Substation, and the Contra Costa-Moraga/Pittsburg-Tesla and Kelso to Tesla PG&E electrical transmission lines are located within the Project area.

5.3.1.4 Flora and Fauna

The Project area was historically located within grasslands, which have changed radically due to introduced species in the last 200 years. These grasslands were located in areas with high summer temperatures and low rainfall and were largely comprised of wildflowers and native annual herbs, with native grasses. Small seasonal wetlands could be found within these grasslands, ranging from a few square feet to several acres. These vernal pools formed in winter during the wet season and dried by summer. In addition to the species that lived in these pools, including rare plant species such as goldfields (Lasthenia spp.), meadowfoams (Limnanthes spp.), and downingias (Downingia spp.), several animal species depended on the seasonal pools. Examples of flora that would have grown in the Project area environs and were useful to Native Americans included various types of wildflowers, such as fiddlenecks (Amsinckia spp.), red maids (Calandrinia menziesii), and California poppies (Eschscholzia californica). The latter was cooked to neutralize the toxic stems and leaves before consumption. Additional examples of useful plants included owl's clovers (Castilleja spp.), yarrow (Achillea millefolium), purple needlegrass (Stipa pulchra) and soap plants (chlorogalum pomeridianum) (Ritter 2018).

Faunal species found before the arrival of Europeans in these grasslands included tule elk (Cervus canadensis nannodes) and pronghorn antelope (Antilocapra americana), as well as coyotes (Canus latrans), jackrabbits (Lepus californicus), and skunk (Metphitis mephitis), and ground squirrels (Spermophilus beecheyi). Bird species included red tail hawk (Buteo jamaicensis) and golden eagles (Aquila chrysaetos). Tiger salamanders laid eggs in vernal pools (Price 2022).

Today, invasive species, such as wild oats (Avena spp.), ripgut brome (Bromus diandrus), red brome (Bromus rubens), rye grass (Festuca perennis), mustard (Sinapis arvensis), various non-native clover species, and foxtail barley (Hordeum murinum) occupy huge tracts of the California grasslands. An estimated 90% of the vernal pools that existed prior to Contact are now gone. Native flora still observed in the Project area environs includes various wildflowers, purple needlegrass, and native clovers (Ritter 2018).

5.3.1.5 Precontact Setting

The Bay Area was a region of intense human occupation long before the European explorers settled in the region in the eighteenth century. In the early twentieth century, the prehistory of the region was virtually unknown, aside from a small amount of ethnographic information (Kroeber 1925) and the discovery of a few prehistoric sites in the southern end of the San Francisco Bay (Nelson 1909).

Over the last decade, archaeologists have presented various chronological schemes for the San Francisco Bay Area and the Sacramento-San Joaquin Delta and Valley. Some are based on locally specific data from a handful of excavated sites, while others have summarized existing data from various sites in the region. Milliken et al. (2007) proposes that cultural shifts occurred in the Bay Area between 11,500 and 8,000 cal B.C., suggesting that Clovis big-game hunters and early Holocene gatherers once lived in the area. However, it is presumed that much of the evidence may have been lost due to stream erosion, by being buried under more recent alluvial deposits, or submerged on the continental shelf (Meyer and Rosenthal 2007). Despite this, there is evidence of a forager-based economy emerging around 8,000 cal B.C., followed by cycles of change beginning around 3,500 cal B.C., as discussed below.

5.3.1.5.1 Paleoindian Period (ca. 13,000 to 10,500 Before Present [BP])

There is minimal evidence of the Paleo-Indian Period in the archaeological record in the Project area. The oldest site from this time period within the Central Valley and Bay Area region is located in the southern San Joaquin Valley: the Witt site at Tulare Lake (CA-KIN-32). Human bone tested from this site yielded dates of 11,379 to 15,802 radiocarbon years before present. According to Meyer and Rosenthal et al. (2007), archaeological material from this time period has either been eroded away or buried by alluvial deposits. No sites of this antiquity are known within the Project vicinity.

5.3.1.5.2 Lower Archaic Period (10,500 to 7,000 BP)

Although archaeological deposits from the Lower Archaic period are rare, the nature of human occupation at this time is better understood than during the latest Pleistocene. Milling tools first appear during this time and diverse faunal and floral assemblages from early Holocene deposits reflect broad spectrum economies, characteristic of Archaic adaptations throughout North America. Approximately 10 miles from the Project location, one of the Los Vaqueros Reservoir sites (CA-CCO-696) returned a date of 7,920 before common era (BCE) from a charcoal sample in the deepest component of the site, which also contained a wide-stemmed projectile point of Napa obsidian and plant remains, including acorns and wild cucumbers. The earliest documented human remains of west central California were recovered at another Los Vaqueros Reservoir site (CA-CC0-637), which returned a radiocarbon date of 6,570 BCE (Milliken et al. 2007). The Lower Archaic economy emphasizes mobile foraging. Artifacts found in these sites include handstones, milling slabs, and various cobble tools. Relationships between foothill and valley floor archaeology have not been explored for this early period, because valley archaeology is lacking from the Lower Archaic and Early Middle Archaic time periods. It is unclear whether foothill sites and valley sites are two different cultural traditions or seasonal expressions of a single culture.

5.3.1.5.3 Middle Archaic Period (7,000 to 2,500 BP)

The beginning of the Middle Archaic (ca. 7,000 BP) in central California is marked by a substantial change in climate with warmer and drier conditions throughout the region. As with earlier periods, well-substantiated cultural deposits from the Middle Archaic (ca. 7,000 to 3,000 BP) are rare in the Project area. Distinct cultural adaptations for the valley floor and foothills are visible in sites dating to the Middle Archaic. Artifact assemblages for the foothill tradition are composed of flaked stone dart points and cobble tools for food processing, similar to those of the Lower Archaic. Tabular pendants, incised slate, and perforated stone plummets are rare but have wide distribution. Middle Archaic sites are also characterized by rock-filled hearths and ovens, and "cairn capped" graves (Rosenthal et al. 2007). Sites of the valley tradition in the later Middle Archaic are fairly well represented in the archaeological record. The "archetypal Middle Archaic Expression" (Rosenthal et al. 2007) is the Windmiller Pattern but the genesis, spatial distribution, and variation across the regional landscape are not clearly defined at this time.

Situated in riverine, marshland, or valley floor settings, as well as on small knolls above prehistoric seasonal floodplains, most Windmiller Pattern sites contain ventrally extended burials that are oriented to the west. These sites contain large amounts of mortuary artifacts with indications of social hierarchy, and often include large projectile points and a variety of fishing gear such as net weights, bone hooks, and spear points. In addition, evidence of trade and interaction is inferred from the presence of imported utilitarian and ceremonial items. Faunal remains imply a hunting economy that included both large and small mammals.

The presence of mortars and pestles in Delta area sites is indicative of a shift to more intensive subsistence strategy. However, the types of plant foods do not change, just the method of the processing, and that increased efficiency may have allowed for a more sedentary lifestyle (Rosenthal et al. 2007). The beginnings of other technologies such as cordage, twined basketry, basketry awls, simple pottery and other baked clay objects, stone plummets, bird bone tubes, and shell beads appear in the Middle Archaic. The presence of exotic items, such as obsidian and shell ornaments, points to a complex exchange system with other native groups throughout California.

5.3.1.5.4 Upper Archaic Period (2,500 to 800 BP)

Evidence for Upper Archaic human occupation in the region is extensive, particularly for the last 2,000 years. Cultural diversity first apparent in the Middle Archaic becomes much more pronounced in the Upper Archaic, as evidenced by contrasting burial postures, artifact styles, and other material culture elements (Bennyhoff and Fredrickson 1994). It was this diversity that Bennyhoff and Fredrickson (1994) were trying to accommodate in their central California taxonomy.

The technologies that are visible in the archaeological record during the Middle Archaic period became more highly specialized during the Upper Archaic period. New types of tools and widely traded goods such as saucer- and saddle-shaped Olivella beads, Haliotis ornaments, obsidian biface "roughouts," and ceremonial blades illustrate the increase in tool specialization. The native population subsisted on seasonally available resources that could be harvested and processed in large quantities, such as acorns. Although there is archaeological evidence that the Berkeley Pattern adaptation began to emerge during this time, as evidenced by large accumulations of habitation debris reflecting long-term use of sites, the

Windmiller Pattern continues to be visible in the archaeological record as well. According to Rosenthal et al. (2007), there is only one archaeological site, CA-SAC-107, that provides an example of the Berkeley Pattern replacing the Windmiller tradition. Unlike the Windmiller Pattern, Berkeley Pattern burials are tightly flexed and have no consistent orientation. Cemeteries with discrete populations of either flexed (Berkeley) or extended (Windmiller) burials can be found in the western parts of the San Joaquin Valley dating to the Upper Archaic. These likely represent alternating occupations by people of both cultural traditions. Berkeley Pattern sites are found in diverse environmental settings, but predominantly within riverine settings. Deeply stratified midden deposits characterize Berkeley Pattern sites and contain numerous shaped milling and grinding stone implements for food preparation. Projectile points become progressively more regularized in shape and somewhat smaller through time during this time period.

5.3.1.5.5 Emergent Period (800 BP–Contact)

A significant shift in material culture is evident after about 800 years ago, marking the beginning of the Emergent or Late Prehistoric Period in the region. The Augustine Pattern coincides with the Late or Emergent Period (further divided into Lower and Upper), ranging from as early as 1100 Common Era to the time of European settlement of this general area in the late 1700s. The artifact assemblages from sites that date to this period indicate that there was intensive fishing, hunting, and acorn and small hard seed harvesting (Moratto 2004). The Augustine Pattern is characterized by a general increase in population and settlements, a regularized exchange system, and an increase in evidence of ceremonialism. Distinctive artifacts seen in Augustine Pattern archaeological sites include small, notched points that demonstrate the introduction and spread of bow-and-arrow, along with bone awls used in basketry, clay effigies, elaborately incised bone whistles, and flanged soapstone stone pipes.

Cremation was also practiced, in a limited way, for individuals of high status during the Lower Emergent period and more generally applied across the population during the Upper Emergent period. An increase in ornamental artifacts is evidence, with rectangular Olivella sequin beads and banjo-type Haliotis ornaments (Kuksu cult), are a common occurrence in burials, suggesting an increase in social status and ranking. Other Upper Emergent characteristics include Stockton serrate points, Olivella lipped and clam disc beads, bead drills, magnesite cylinders, hopper mortars, pre-interment gravel pit burning with tightly flexed burials, and grave-associated items of groundstone, which were ceremonially "killed." The arrival of Spanish explorers and the establishment of missions disrupted these life ways in the late eighteenth century (Moratto 2004). Sometime after about 800 years ago, a significant change in obsidian production and exchange is recognized throughout central California. In the Northern San Joaquin Valley, this change is identified through shifts in obsidian source frequencies. Napa Valley obsidian becomes the primary source material used in this region (Jackson 1974); supplanting material obtained from eastern quarries. Haliotis ornaments and large quantities of shell beads manufactured in southern California and along the central and northern California coast are found in residential sites throughout the Sacramento Valley and lower foothills of the Sierra Nevada and Coast Ranges.

5.3.1.6 Ethnohistoric Setting

The Project area is within the territory associated with the ethnographic boundaries of the Yokuts and Ohlone. These two groups are from the Penutian family of languages, which also includes the Wintun, Maidu, and Miwok. The Penutian language family occupied nearly half of California and most of central California. During the Emergent Period, ancestors of the Ohlone entered the San Francisco Bay Area and occupied the region from the Carquinez Strait south to Point Sur (Kroeber 1925; Levy 1978b). Native American land use would have included habitat management for the purpose of securing and maintaining resources. It is likely that the region was also used by bordering groups such as the Tamcans and/or the Cholvons (Yokuts subgroups) and the Volvons (Bay Miwok subgroup) (Milliken 1995, 2008), and this section includes information about the Yokuts, the Ohlone, and the Miwok.

Although there is no evidence that prehistoric groups in the region were practicing agriculture, data do exist that native people manipulated their environment to encourage growth and the increase of natural resources. The Ohlone, Yokuts, and Miwok, like many California groups, practiced intentional burning to clear their villages of underbrush, other plants, and trees. Additionally, after the season for harvesting seeds and nuts, the grasses would often be set on fire to promote growth for the next harvesting season (Margolin 1978).

Traditional indigenous lifeways began to be drastically altered by the early 1800s due to disruption by new diseases; declining birth rates; impact of the mission system, which moved native peoples from their traditional lands involuntarily; depredation by prospectors on their way to the gold country; and later displacement by Euro American ranching and farming. As with other Native California groups, the Miwok and Ohlone were transformed from hunters and gatherers into agricultural laborers who lived at the missions and worked with former neighboring groups such as the Yokuts and Esselen (Levy 1978b; Milliken 1995).

5.3.1.6.1 Ohlone

The combined territory of the Ohlone-speaking people, also known as the Costanoans, extended across the San Francisco Bay Area along the coast from the current day location of the Golden Gate Bridge in the north to just beyond Carmel in the south, and as much as 60 miles inland. The Ohlone are believed to have inhabited the area since AD 500 or earlier. Historically, the Ohlone were called the Costanoan Indians. Costanoan is derived from the Spanish word costaños, meaning people of the coast (Levy 1978a). The term Ohlone or Costanoan denotes a larger group with many other tribelets throughout the Bay Area (Levy 1978a). The term Ohlone is preferred by the present-day members of the group.

The Ohlone are a linguistically defined group speaking eight different but related languages. The Ohlone languages, together with the Miwok languages, comprise the Utian language family of the Penutian stock (grouping of language families that includes many Native American languages of western North America, specifically in California and Oregon). The Ohlone were politically organized by tribelet, which consisted of one or more villages and camps within a territory generally designated by geographic features. Tribelets generally had 100-250 members (Kroeber 1925).

The Ohlone subsistence was based primarily on hunting, gathering, and fishing. Hunted animals included deer, antelope, tule elk, and rabbit. Quail, pigeons, jays, and flickers were trapped. Duck and other waterfowl were caught in nets. The Ohlone also fished with harpoons, hooks, and nets. A wide variety of plant foods was gathered, but the acorn was the most important, with several different varieties of acorn gathered. A variety of other nuts, seeds, and roots were also gathered, as well as many different types of plants were eaten as greens (Levy 1978a).

The Ohlone nation was organized into tribelets, and although a patrilineal system was practiced, chiefs could be male or female (Levy 1978b). Each tribelet occupied a specific territory, using several more or less permanently inhabited settlements and a larger number of seasonal campsites at various times during their annual subsistence round (Levy 1978b). Records from the Spanish period indicate that the Ohlone tribelets were autonomous from each other politically, and each tribelet may have had more than one permanent village as well as satellite, temporary procurement camps (Levy 1978b). The political system of the Ohlone appears to be very democratic: Where a male heir to a chief was not available, the office would go to the closest female blood relative. With no apparent heirs, the status of chief would be granted to an individual through community concurrence (Levy 1978b). In public situations and in dealings with other groups or tribelets, the chief acted as leader, but in common governance, the chief, with a council, was but an advisor to the people (Levy 1978b).

The Ohlone, along with other groups in the interior, had a socioeconomic relationship that was guided by trade. Resources abundant in one area were not monopolized but shared with other groups who were lacking. Intertribal relationships appeared to be built upon reciprocity of goods (Margolin 1978). The trade network among central California groups consisted of an exchange of gifts, hosting feasts, and request for permission to share in another tribe’s resources. Although a group’s economy or subsistence might be reliant on a trade, to forgo asking for permission or deny a request would likely lead to warfare (Margolin 1978).

5.3.1.6.2 Yokuts

The combined territory of the Yokuts-speaking people comprised approximately 250 miles extending down the San Joaquin River to the foot of the Tehachapis and east from the Fresno River to the adjacent foothills of the Sierra Nevada. The Yokuts were unique among Native Californians in that they were divided into true tribes. Each tribe had a unique name, a distinctly different dialect, and a defined territory (Kroeber 1925). The Yokuts language is a member of the California Penutian stock that includes four other groups found in central California: Miwok, Ohlone, Maiduan, and Wintun. Yokuts were divided into three groups: the Southern Valley Yokuts, the Northern Valley Yokuts, and the Foothill Yokuts. The

Northern Valley Yokuts are the historical occupants of the central and northern San Joaquin Valley (Wallace 1978), but were known to venture into the Altamont Hills for resource gathering trips

The Northern Yokuts village structure is unknown but is assumed to be based on the single family and quite similar to other groups' villages to the north and south of the Northern Yokuts (Wallace 1978). Members of a tribe lived in one principal settlement, periodically leaving the settlement during the spring floods to move to higher ground. Members of a tribe lived in one principal settlement, periodically leaving the settlement during the spring floods to move to higher ground. The group would divide into smaller groups during different harvesting seasons, leaving a small group at the main settlement. Generally, the tribes stayed at the main settlement because food near the village was abundant. Acorns from valley oaks and tule roots were ground into a meal and cooked as a thick soup or gruel. The Yokuts fished and collected mussels and pond turtles, as well as hunted waterfowl, tule elk, pronghorn antelope, jackrabbits, squirrels, and quails. Salmon, in particular, is noted as a prime source of food in historical accounts of the Northern Yokuts.

During the Spanish and Mexican Periods, 1769 to 1846, the Northern Yokuts rapidly declined in population. European disease swept through the San Joaquin Valley. In 1833, a particularly virulent malaria epidemic wiped out entire tribes. Decreasing native populations along the coast resulted in the Franciscan friars pulling neophytes from farther and farther inland. Many Northern Yokuts were taken to the San Jose, Santa Clara, Soledad, San Juan Bautista, and San Antonio missions. During the Mexican Period, Northern Yokuts, who had been successfully stealing animals from the new ranches, clashed with ranchers. During the American Period, which began in 1846, the Northern Yokuts were further decimated by the thousands of prospectors in search of gold who descended upon the region (Wallace 1978).

5.3.1.6.3 Eastern Miwok (Bay and Plains Miwok)

The Miwok occupied the areas from the inner Coast Ranges near Mount Diablo and into the Delta region and extended into the northern portions of the East Bay Hills (Levy 1978a). Ethnographic information about the Bay Miwok is scarce, early in the Spanish period, they, along with other Native American groups, were moved by large numbers from their traditional lands into the mission system where they were forced to assimilate and became indistinguishable neophytes (Kroeber 1925). The Bay Miwok were the first of the Eastern Miwok to be missionized and the first converts among the Bay Miwok came from the Saclan tribelet to Mission San Francisco in 1794 (Levy 1978a). In addition to occupying Mission San Francisco, many Bay Miwok were also moved into Mission San Jose. The tribelet associated with the Project vicinity was the Volvon, the majority of whom were sent to Mission San Jose and Mission Dolores in the years 1810 to 1811 (Milliken 1995, 2008).

Before missionization, the Miwok lived in tribelets, which were the primary political unit. Each tribelet occupied a specific territory, living in several permanent settlements in combination with a larger number of seasonal campsites. The latter were occupied at various times during their annual subsistence round (Levy 1978a). Each tribelet controlled an area that included several permanent settlements, seasonally occupied campsites, and resource procurement sites. Permanent settlements could include brush shelters, sweat houses, acorn granaries, a dance house, and several earth-covered houses (Kroeber 1925). Bay Miwok also recognized lineage as a political unit. Permanent settlements were occupied by different lineage groups and were often named for a specific geographic locality (Levy 1978a).

Similar to other groups in California, the Eastern Miwok subsistence was based primarily on hunting, gathering, and fishing. Only tobacco was occasionally planted and cultivated. Hunted animals included deer, antelope, tule elk, and rabbit. Quail, pigeons, jays, and flickers were trapped. Duck and other waterfowl were caught in nets. Bay Miwok fished with nets, harpoons, and hooks, and were primarily dependent upon marine resources. A wide variety of plant foods were gathered, and of these, the acorn was the most important, with several different varieties of acorn being available. Nuts, seeds, and roots were also gathered, and many different types of plants were eaten as greens (Levy 1978a).

5.3.1.6.4 Study Area and Vicinity

For over 9,000 years, Native Americans have occupied or used the Mount Diablo-Livermore Valley-Altamont Pass (Milliken et al. 2007:99). From the Project area, the Brushy Peak Archaeological District (District), is approximately 5 miles west-southwest and may represent the closest village sites or long-term occupations sites to the Project area. The District, which is limited to East Bay Regional Park District (EBRPD) boundaries, includes bedrock mortar complexes, midden sites, burials, and cupule rocks. The District is described as representing only a part of the overall cultural landscape at Brushy Peak (Fentress 2010). Northeast of the top of Brushy Peak, a series of caves, referred to as the Murrietta Caves, were also utilized by precontact peoples. Recorded resources include bedrock milling features, various stone tool types, and midden soils. These caves were also occupied during the historic period, as evidenced by the presence of refuse deposits and structural additions like cemented floors and rock walls. Additionally, resource procurement sites and trails are recorded in the area around Brushy Peak. Ceremonial use has also been documented both within and outside of the District. In 2011, during the establishment of EBRPD management protocols, Native American representatives requested that the district be renamed the Brushy Peak Native American Cultural District to reflect the continued traditional use of the area into the modern day (Wiese 2011).

Contemporary and ethnohistoric descendants of the precontact Native American groups have reported that Brushy Peak is a sacred place where ancestral Native Americans would conduct ceremonies and worship their gods and animal spirits (IBMI 2018, LARPD 2025). For the Mutsun Ohlone, this was the location where the world first came into existence. Sacred beings, such as Condor and his wife, and Falcon are tied to this location. The Ione Band of Miwok Indians stated that Brushy Peak, as well as several locations around the peak, including Brushy Creek and some of its tributaries, the Byron Hot Springs, and vernal pools, are featured in key oral histories that tell of their creation, their laws, and their responsibilities. Important events have occurred in this area. The trails in the area are called the trail of tears by the Ione Miwok, who describe presidio soldiers and missionaries using the trails to move enslaved Native Americans from their traditional lands to the missions. These trails also provided a route home for those that were able to escape the missions (Yonemura and Aguilar no date).

According to accounts of early Spanish exploratory expeditions in the region, the study area appeared to have been devoid of occupation and utilized for temporary occupation to hunt or harvest foods (Cook 1957). It is situated between lands occupied by an Ohlone tribelet, called the Seunenes, located in the Livermore Valley, approximately 10 miles southwest of the study area, and one of the San Joaquin River tribelets, the Leuchas, who occupied the west bank of the San Joaquin River around Tracy, approximately 10 miles east of the study area (Cook 1957). Fredrickson and Banks (1975) notes that the Bolbones main village was located 2 miles east of the Bethany Reservoir, which would be closer to the Project area than the previously mentioned occupation sites at Brushy Peak. Fredrickson and Banks (1975) reference the "Cuevas Affair" of 1805, which occurred near the study area, approximately 10 to 12 miles northeast of Livermore, where the Leuchas attacked a Spanish missionary expedition. In response, a Spanish punitive expedition led by Sergeant Luis Peralta was dispatched. Peralta's expedition eventually located approximately 40 Leuchas, killing 5 and capturing 25. Peralta's report did not record any account of a permanent village in the area, nor did he record any indication of even a temporary camp (Cook 1957).

5.3.1.7 Historic Setting

The arrival of the Spaniards in 1769 heralded great change for native peoples in the San Francisco Bay Area. At the time of Spanish contact , there were many small distinct tribal groups from San Rafael to Carmel. With the establishment of the missions in the 1770s, the collapse of tribal life accelerated. By the early 1800s, Missionization—with its endemic and epidemic disease and forced adoption of European culture—resulted in the near total collapse of tribal culture in the San Francisco Bay Area (Milliken 1995). Recorded history in the study area includes early settlement, the development of irrigation and flood control, the development of transportation, and the evolution of local agricultural industry.

In 1542, Juan Rodriguez Cabrillo was the first of the Europeans explorers to sail along the California coast. The goal of this expedition was to explore the new territory and to find worthy locations for establishing Franciscan missions. Along the way, they rediscovered the Bay of Monterey, described by sailors 100 years earlier. Several accounts of this expedition exist including those of Fray Juan Crespi (Bolton 1927), Miguel Costansó (Browning 1992), and Pedro Fages (Priestley 1937). The expedition of Juan Bautista de Anza and Fray Pedro Font in 1776 traveled across portions of northwestern Santa Clara County. On March 25, they camped at place that they called San Joseph de Cupertino, a name that is preserved today in the City of Cupertino to the east. From here, Font and de Anza remarked that they could see the San Francisco Bay.

5.3.1.7.1 Mission Period (1769 to 1822 CE)

The arrival of the Spaniards and the subsequent establishment of the missions was the beginning of the end of tribal life in the Sacramento-San Joaquin Delta and San Francisco Bay Area. The destruction of native culture was caused by the alteration of the landscape due to the introduction of European plants and animals, the destruction of social systems by new mission life ways, and European diseases. The missions of the San Francisco Bay Area were established as follows: Mission Dolores in 1776, Mission Santa Clara in 1777, and Mission San Jose, in the modern city of Fremont, in 1797. The missions depended heavily on Native Americans for labor (Milliken 1995). Mission lands were primarily used for cultivating beans, corn, flax, hemp, linseed, peas, and wheat and for raising cattle, horses, sheep, pigs, goats, and mules. The missions also had vegetable gardens and fruit trees, such as peaches, apricots, apples, pears, and figs. The purpose of the missions was to convert the people who lived here into Roman Catholic citizens of Spain. In the charter of the Alta California Missions was a stipulation that 10 years after the establishment of a mission, it should be given over to the Native Americans for their benefit. This never came to pass (Lightfoot and Luby 2002).

5.3.1.7.2 Rancho Period (1822 to 1848 CE)

In 1821, Mexico declared independence from Spain. In 1822, California became a Mexican territory. Following the secularization of the missions in 1834, representatives of the Mexican government distributed very large land grants to various individuals. Native Americans continued to be laborers for new landowners (Beck and Haase 1988). The land use pattern of Alta California during this period expanded to include cattle ranches primarily for the hide and tallow trade. Working in adobe workshops, both Native American neophytes and immigrant artisans engaged in the manufacture of such items as “leather, soap, saddles, harnesses, blankets, shoes, and wagons” (Marschner 2002). After California’s transition into Mexican territory and following the secularization of the missions in 1834, representatives of the Mexican government distributed large land grants to various individuals. In 1848, California was officially annexed to the United States (Kyle et al. 1990). Some of the neophytes found work on local ranchos as vaqueros, running cattle and sheep in the hills of the former mission lands.

5.3.1.7.3 American Period (1850 CE to Present)

California officially became a state in September 1850. The courts immediately reviewed Spanish and Mexican land grants, which were either confirmed or denied. Cattle ranching, agriculture, and orchard production rose in the twentieth century and continues today. The discovery of gold in the Sierra Nevada by Euro Americans ignited a major population increase in the northern half of California, as immigrants poured into the territory seeking gold or the opportunities it presented. The significant influx of people had a major impact on the environment and the remaining indigenous populations. Beginning in 1849, the Gold Rush created a shortage of ranch workers, who rushed off to seek their fortunes. This loss of a ranch workforce, along with a huge increase in Euro Americans squatting on these lands, would later contribute to the disintegration of the Mexican land grants and eventual division and sale of land grant property (Robinson 1979).

5.3.1.7.3.1 Byron

The community of Byron is approximately 6.5 miles from the Project area. The area was first explored in 1772 as part of the Mount Diablo area expedition conducted by the Spanish Captain Fages and Fray Crispi. No occupation or development occurred until it was later deeded to Jose Noriega in a Mexican Land Grant in 1835, but this land grant did not include the Project area. The area around modern-day Byron became important as a route to the inland gold fields from the San Francisco Bay. The adjacent community, known as Livermore's Valley after Robert Livermore, would accommodate travels to the nearby mines with room and board. In 1836, Noriega sold 17,000 acres of his land to John Marsh (East Contra Costa Historical Society 2025). Marsh purchased this land for approximately $500 and his Rancho extended from modern Byron in the west to the San Joaquin River, near the modern community of Lathrop, in the east. Marsh is credited with facilitating the Euro-American settlement of the San Joaquin Valley by promoting migration via publications in eastern U.S. newspapers. In 1841, the Bidwell and Bartelson wagon of settlers arrived at Marsh's Rancho; from this migration, the settlement of the region was begun (East Contra Costa Historical Society 2025).

The Byron area was rich with natural resources: springs, rivers, pastureland, and vegetation. Early crops centered on hay and wheat. Byron was officially founded in 1878 when the Central Pacific's rail line connected Contra Costa and the San Joaquin Valley, and Byron was considered a nice stop between the extensions. By the1880s, the wine industry began to take hold in the area. Other important industries included oil and coal mining in the surrounding hills (Livermore Heritage Guild 2006). As ranchers and farmers fought for competing land use, the free-range style of ranching ended. By 1960, land parcels were fenced off in barbed wire to prevent roaming cattle from destroying crops (East Contra Costa Historical Society 2025).

5.3.1.7.3.2 Altamont Pass Railroad Corridor

In 1862, the Pacific Railroad Bill was passed by Congress and signed into law by President Abraham Lincoln. The law provided funds and public land grants for the construction of the Transcontinental Railroad. Within the Altamont Pass, an existing railroad line, which connected Oakland and Sacramento, the Western Pacific Railroad, was subsumed in 1870 by the Central Pacific Railroad (Hofsommer 1986). The Transcontinental Railroad connected both coasts of North America and had far-reaching effects for both the country and California. The new railroad enabled California's agricultural and mining products to be more easily shipped to eastern markets. It increased immigration from densely populated eastern cities to California, as the cross-country journey that once took months now took only days (Nale 2003a; Schrader 2005).

In 1885, the Central Pacific Railroad and the Southern Pacific Railroad were combined under the Southern Pacific Railroad; however, the two companies financially remained separate. Between 1901 and 1912, the Southern Pacific and the Central Pacific were operated by the Union Pacific Railroad, and extensive upgrades and repairs were made to the lines and the equipment (Athern 1922). In May 1908, construction began on a second rail line through the Altamont Pass by the Western Pacific Railroad Company, a relatively new company that formed in 1903. This second line, running adjacent to the existing alignment of the Southern Pacific, was intended to compete with the aforementioned rail company who held nearly all the track at that time (Nale 2003b).

The Western Pacific Railroad line, constructed in 1908, became well known for the California Zephyr trains that operated from 1929 to 1970 (MacGregor and Benson 1977). Western Pacific was purchased by the Union Pacific Railroad in 1982. It is still used by Union Pacific for freight traffic and by the Altamont Corridor Express commuter train. Southern Pacific was in turn bought again by the Union Pacific in 1996. Union Pacific abandoned their Altamont Pass line in 1984, pulling up the ties and the rails, deeding the land to Alameda County (Nale 2003b). Today, the alignment is largely used for an underground utility right-of-way.

5.3.1.7.3.3 Altamont

Before the arrival of the railroad, the area around Altamont was sparsely populated. The Summit Hotel was built in 1868 by Edward Hobler. Once the Central Pacific Railroad was finished, the town of Altamont was established with several residences. A one-room schoolhouse and a two-story train depot with a turntable were built in 1870 (Livermore Heritage Guild 2006). A general store was built by William Wright, who later became a judge, in 1872. The town also had a church, which later became a library, a circa 1880 blacksmith shop (Livermore Herald 1880) and an 1897 creamery (Pacific Rural Press 1897). The post office was first located in the hotel. There was little agriculture in the area before the coming of the railroad, and most of the acreage in and around Altamont was used as grazing for sheep and cattle. The railroad provided a way to ship products to market and a hay industry sprung up as a result. “Livermore hay grown on the Altamont hills is the best in the West and has been shipped in large lots to Liverpool, England” (Baker 1914). There were several hay and grain warehouses built over time near the tracks, mainly lost to fires. One metal-clad warehouse remains today and was likely built in 1933 by local contractor Sam Bothwell and Son for the Independent Warehouse Company of Livermore (Livermore Journal 1933).

The Lincoln Highway follows the current alignment of Altamont Pass Road through the town of Altamont. It was the first transcontinental highway in the United States and was dedicated in 1913. The Lincoln Highway began in Times Square in New York and ended at Lincoln Park in San Francisco. The route was composed of previously existing roads, and the rest of the roadway was paved over time. The Lincoln Highway was split into various segments when states accepted the new federal numbering system in 1926, becoming State Route 50 through Nevada and California (Butko 2013). In 1938, State Route 50 was rerouted, bypassing what is now the Altamont Pass Road (Division of Highways 1938). The Summit Garage of 1926 (Livermore Journal 1926) is all that remains of the Lincoln Highway, other than the alignment.

5.3.1.7.3.4 Study Area

There is no evidence that the Project area was occupied or utilized during the Spanish or Mexican Periods. The earliest American use of the area included two roads and a telegraph line that connected San Jose and Stockton, running south of the Project area between the 1850s and the 1870s (1857 Bureau of Land Management [BLM] General Land Office [GLO]; 1874 BLM GLO). In the late 1870s, maps show that Section 11 is owned by C. McLaughlin, and Section 10, where the Project area is located, was owned by William O’Brien. No additional information was identified that would indicate either landowner occupied the land.

The study area remained rural throughout the late nineteenth and early twentieth centuries, with development limited to an electrical transmission line, likely the initial Contra Costa-Moraga/Pittsburg-Tesla 230 kV line. An additional transmission line was constructed through the study area by 1943 and a third in the 1950s (USGS 2024); otherwise, the area remained uninhabited and used mostly for cattle grazing.

The study area saw its most significant development in the mid-1960s when work on the California State Water Project (SWP) near the northern section of the study area began. The SWP was initially proposed in

1919; however, each subsequent decade saw plans proposed to complete a north-south water transfer, but no construction. In the post-World War II economic boom, these plans were finally able to be financed. The approval of the project stalled again, and a series of committees met in the late 1950s to address voter issues. The compromises from these meetings were incorporated in the 1959 Burns-Porter Act, also known as the California Water Resources Development Bond Act, which was ratified by voters in 1960. The Act was the authorization for implementation of various water projects for the State's water program and provided the funding via a $1.75-billion bond for the construction of these projects. Official construction on the north-south water transfer began in 1961 (California Department of Water Resources 2025).

The SWP began construction within the study area in 1961 with the Forebay Dam and the Bethany Reservoir. The dam and reservoir were completed by 1967. The purpose of the Bethany Reservoir was to serve as a forebay for water flowing from the Clifton Court Forebay, and to channel water into the California Aqueduct, which begins at the southeastern end of the Bethany Reservoir (California State Parks 2013). A parking lot, picnic tables, and other recreational supports have since been constructed and, and hiking trails around the reservoir are maintained. The electrical transmission lines within the Project area were visible on metal towers in the late 1960s (NETR 2024).

In 1980, the Altamont Pass Wind Resource Area (APWRA) was established. The study area is located within this area. The APWRA was one of the first large-scale wind farms in the world and took advantage of the windy conditions of the Altamont Pass. The wind farms consisted of large steel windmills, their associated access roads, and the necessary infrastructure required to deliver the wind-generated power. The Ralph Substation was built in 1987. Currently, the APWRA has more than 5,000 turbines and remains one of the largest wind farms in the United States (Alameda County Community Development Agency 2023b; Foster 2022).

The study area remains mostly undeveloped, apart from the Bethany Reservoir, the transmission lines, and the Ralph Substation. The area is rural, without any other development aside from the preceding depicted on any historic map or aerial (Google 2024; NETR 2024; USGS 2024).

5.3.2 Research Design for the Cultural Resources Inventory

This section provides the research design used by Jacobs to guide the records and archival search and subsequent fieldwork phase of the cultural resource inventory for the Project. Given identified themes for this Project, property types and survey expectations were defined. The methods used both during the records and archival search and the fieldwork phase were planned to meet or exceed the California Archeological Resource Management Reports (ARMR) and California Environmental Quality Act (CEQA) requirements for analyzing potential impacts on historical resources.

Review of the records search results, previous studies within the Project area and study area, and a historical aerial and map review indicated that cultural resources within the Project area could include both precontact and historic-period resources. Precontact resources could include habitation sites with midden, lithic scatters, and resource processing sites. Historic-period resources could include historic homesteads, foundations, refuse dumps, and scatters, dating as early as the American Period and into the mid-twentieth century. The Project area has been used for cattle ranching for decades, and buried features such as walls or farmer's ditches could also be identified. The wider ethnographic review identified the presence of a tribal cultural resource, the Brushy Peak Traditional Cultural Property (TCP), approximately 4.8 miles west-southwest of the Project area. This TCP sits at a higher elevation, approximately1,700 feet above mean sea level (ft AMSL), than the Project area, which sits at approximately 400 ft AMSL, and is potentially visible from the Project.

5.3.2.1 Research Objectives

The initial goal was to identify any cultural resources and tribal cultural resources located within the study area so that effects of the Project could be assessed. To accomplish this goal, background information was examined and assessed, and a field survey was conducted to identify cultural remains. Reviews of the records search results, previous work in the study area, and a historical map and aerial check indicated that cultural resources within the study area are likely to be a combination of precontact and historic-period sites. Precontact sites in the study area consist of intensive habitation, cemeteries with varying numbers of burials, and ceremonial, midden and other occupation/use sites. Historic-period sites consist of structures and buildings related to farming, agriculture, and residential activities.

The fundamental goals of an intensive pedestrian survey are to identify and document previously unrecorded cultural resources and tribal cultural resources and to analyze cultural materials, not only to better characterize potential Project effects, but also to attempt to confirm or elaborate on our current understanding of the prehistory and history of the region. From a management perspective, the ability of specific resources to address research questions provides a basis to evaluate eligibility for the California Register of Historical Resources (CRHR).

5.3.2.2 Research Questions

The literature review and search results suggest that the study area has a moderate archaeological sensitivity. The study area before the historic period was that of narrow ridges with steep slopes, with poorly developed or stabile soils on the ridge crests and shoulders. Within the valley floors, there was well-developed, stable soils. The study area would have been composed mostly of rolling grassland and vernal pools.

The area was used historically for ranching and was not identified as listed within any Rancho. A total of 12 previously recorded sites were identified in the study area consisting of precontact habitation sites, and historic-period structures and associated resources. These historic-period and architectural resources are primarily associated with electrical transmission for the surrounding cities. Pertinent research questions that are applicable to the Project site are discussed as follows:

1. The Project area is located in an area with abundant water and flora resources. Valleys with intermittent drainages, streams, and springs, are very accessible. The variety of important resources each of this setting can provide indicates this area is excellent for precontact resource procurement and habitation. Additionally, previously recorded precontact sites, including milling sites, a habitation site with a handstone, and a sparse lithic scatter are known in the study area. Finally, although there has been a long history of ranching activities, the study area has not been developed prior to the use for wind energy.

   Research Questions: Are there any remaining areas within the Project area that remain intact enough to contain archaeological remains? Does the Project area show any evidence of resource procurement or processing? Could such sites be related to larger habitation sites within the study area?

2. The historic-era map review indicates the study area is sparsely developed with unimproved roads located within and adjacent to the Project area and sparse rural residences located outside of the study area. At least two homesteads with refuse scatters and one ranch complex were previously recorded within the study area. It is possible that historic-era structures and other associated resources could have been extant within the Project area that do not show up in the archival record.

   Research Questions: Are there any remaining areas within the Project area that remain intact enough to contain archaeological remains? Is there any evidence of use within the Project area that dates to the Spanish Era? The Mexican Era? The historic American Period?

3. The Project area does not appear to have been developed until the electrical tower installations for electrical transmission lines occurred prior to 1943 and the wind energy development began in the early 1990s.

   Research Questions: The electrical transmission lines are still standing and in use. Are there any additional features associated with these lines or the construction of these lines remaining in the Project area or the architectural survey area? Is there any archaeological evidence of construction or maintenance of these lines in the Project area?

5.3.2.3 Survey Expectations

Based on the level of disturbance related to the construction of the transmission lines, underground utilities, the wind farm access roads, and the use of the land for ranching activities for the last 150 years, as well as the results of the literature search, expectations of finding surficial archaeological resources within the archaeological survey area during the field survey were considered low.

Despite a low potential for archaeological sites in the archaeological survey area, site types that may be found in undisturbed or open areas of the Project area could include lithic scatters, resource procurement areas, and temporary campsites. Historic-period sites could include refuse scatters or dumps, ranching features, wells, foundations, ditches, and ranching equipment.

The architectural sensitivity of the Project area is expected to be low. The topographic map, aerial imagery, and previous study review indicates little to no development outside of the substation and electrical towers built by PG&E in the 1940s and 1950s. Two historic homestead foundations and one ranch complex were identified within the study area; however, the potential to encounter built resources is considered low.

5.3.3 Methods

This section provides methods used by Jacobs to guide the records and archival search and subsequent fieldwork phase of the cultural resource inventory for the Project. The methods used during the records and archival search and the fieldwork phase were planned to meet or exceed the CEC requirements (CEC 2023), as well as California ARMR reporting and CEQA requirements for analyzing potential impacts on historical resources.

The initial goal was to identify any cultural resources and tribal cultural resources (ethnographic, architectural, historical, and archaeological) located within the Project area so that effects of the Project could be assessed. To accomplish this goal, background information was examined and assessed for the Project area, an ethnographic review area, and the study area. A pedestrian field survey was completed on December 18, 2024, and January 7 and January 14, 2025, to identify cultural resources, tribal cultural resources, and architectural resources.

The fundamental goals of the survey were to identify and document previously unrecorded cultural and tribal cultural resources and to analyze cultural materials, not only to better characterize potential project effects, but also to attempt to confirm or elaborate on our current understanding of the prehistory and history of the region. From a management perspective, the ability of specific resources to address research questions provides a basis to evaluate CRHR eligibility.

5.3.3.1 Literature Search

A CHRIS records search was conducted by the Northwest Information Center (NWIC) in Rohnert Park, California to determine whether precontact or historic cultural resources or tribal cultural resources have been previously recorded within the Project area, the extent to which the Project area has been previously surveyed, and the number and type of cultural resources within a 1-mile radius of the of BESS site and within a 1-mile radius of the gen-tie corridor. The results of the CHRIS search were returned on November 16, 2024 (NWIC File No.: 24-0677). In addition to the CHRIS records, an archival search of the archaeological and historical records, national and state databases, and historic maps was conducted and included the following sources:

- NRHP: listed properties
- CRHR: listed resources
- Historic Property Data File for Alameda County
- Archaeological Determinations of Eligibility
- Built Environment Resources Directory
- California Inventory of Historical Resources

To completely examine the ethnographic review area, previous cultural studies conducted outside the 1-mile-radius study area were examined for the area west of the Project area, which also included a review of published articles discussing the ethnography of the Altamont Pass. These sources are included in the References section.

5.3.3.2 Historical Societies

On December 18 and December 19, 2024, Jacobs contacted the following institutions to request information about cultural resources in the study area.

- Alameda County Historical Society
- Alameda Museum
- Alameda County Parks, Recreation and Historical Commission
- Amador-Livermore Valley Historical Society (now known as Museum on Main)
- Livermore Heritage Guild
- East Contra Costa Historical Society
- California Historical Society
- California State Library's California History Room

5.3.3.3 Historical Map and Aerial Imagery Review

Jacobs staff reviewed the following additional historical maps and aerial photographs..

- 1839 Diseño of the Canada de los Vaqueros Rancho, California State Archives
- 1840 Diseño of the Las Positas Rancho, Online Archive of California via University of California Berkeley
- 1843 Diseño of the El Pescadero Rancho, California State Archives
- 1857 Original Survey BLM GLO survey plat map for Township 2 South Range 3 East (GLO 2024)
- 1874 (January) Original Survey BLM GLO survey plat map for Township 2 South Range 3 East (GLO 2024)
- 1874 (October) Original Survey BLM GLO survey plat map for Township 2 South Range 3 East (GLO 2024)
- 1878 Thompson and West Alameda Co. 8 map (Alameda County., California)
- 1914 Bethany, CA (1:31,680) USGS topographic quadrangle map (USGS 2024)
- 1916 Byron, CA (1:62,500) USGS topographic quadrangle map (USGS 2024)
- 1940 Byron, CA (1: 62,500) USGS topographic quadrangle map (USGS 2024)

- 1947 San Jose, CA (1;250,000) USGS topographic quadrangle map (USGS 2024)
- 1952 Bethany, CA (1:24,000) USGS topographic quadrangle map (USGS 2024)
- 1956 San Jose, CA (1:250,000) USGS topographic quadrangle map (USGS 2024)
- 1962 San Jose, CA (1:250,000) USGS topographic quadrangle map (USGS 2024)
- 1962 San Jose, CA (1:250,000) USGS topographic quadrangle map (USGS 2024)
- 1966 San Jose, CA (1:250,000) USGS topographic quadrangle map (USGS 2024)
- 1978 Clifton Court Forebay, CA (1:24,000) USGS topographic quadrangle map (USGS 2024)
- 1989 Stockton, CA (1:100,000) USGS topographic quadrangle map (USGS 2024)
- 2012 Clifton Court Forebay, CA (1:24,000) USGS topographic quadrangle map (USGS 2024)
- 2015 Clifton Court Forebay, CA (1:24,000) USGS topographic quadrangle map (USGS 2024)
- 2018 Clifton Court Forebay, CA (1:24,000) USGS topographic quadrangle map (USGS 2024)
- 2012 Clifton Court Forebay, CA (1:24,000) USGS topographic quadrangle map (USGS 2024)
- 1949, 1959, 1966, 1968, 1974, 1979, 1981, 1982, 1987, 1993, 2008, 2009, 2010, 2012, 2014, 2016, 2018, 2020, and 2022 historic aerial imagery (NETR 2024)
- Google Earth 2024 Imagery (Google Earth 2024)

5.3.3.4 Archaeological and Architectural Pedestrian Survey

A cultural resources survey was completed on December 18, 2024, and January 7 and January 14, 2025. According to the AB 205 Opt-In Application guidelines, archaeological resources surveys must be inclusive of the Project site and Project linear facility routes, extending to no less than 200 feet around the Project site, substations and staging areas, and to no less than 50 feet to either side of the right-of-way of Project linear facility routes. New cultural resource and tribal cultural resource surveys will be completed if survey records of the Project area are more than 5 years old. The survey methodology for precontact and historic archaeological resources used linear pedestrian transects spaced at 10- to15-meter intervals throughout the entire survey area.

The architectural survey was inclusive of the Project area and a buffer of 0.5 mile around the Project area, in accordance with the AB 205 Opt-In Application guidelines, for historic architecture field surveys in rural areas. All parcels included in the architectural survey area were reviewed before the survey for structures older than 45 years of age. The architectural survey area includes portions of the following APNs: 99B-7020-5, 99B-7020-5, 99B-7350-1, 99B-7350-2-5, 99B-6175-1-1, 99B-6175-2-3, 99B-7375-1-1, and 99B-7375-1-7.

Lastly, surveyors attempted to view Brushy Peak from various points around the Project area and took photographs from those locations where any part of the peak was visible from the Project area.

Navigation was conducted using Field Maps. Photographs of the survey area are included in Appendix B of the Cultural Resources Technical Report. Based on the archival research completed for the Project area, which indicates a low to moderate level of disturbance to the entire survey area, expectations of finding surface archaeological resources within the Project area during the field survey were moderate.

The Office of Historic Preservation (OHP) Instructions for Recording Historical Resources (1995) defines a site as the location of a prehistoric or historic occupation or activity. A district is defined as possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. The term "structure" is used to distinguish buildings that are functional constructions made usually for purposes other than creating human shelter.

All cultural resources and tribal cultural resources identified or relocated would be plotted on Field Maps or plotted on a USGS 7.5-minute topographic map and recorded on the California Department of Parks and Recreation forms. All cultural resources identified during the survey, if found, would have been evaluated for eligibility for listing in the CRHR.

5.3.3.5 Native American Tribal Outreach

Jacobs contacted the Native American Heritage Commission (NAHC) requesting a search of their Sacred Lands File for traditional cultural resources within or near the study area on October 24, 2024. Jacobs also requested a contact list for Native American groups and individuals associated with the Project area to enable the Applicant to conduct tribal outreach and solicit input and comments from the Native American community. This list was requested so that interested parties could be contacted for more information on the potential for Native American cultural resources or tribal cultural resources to be present within or near the Project area. Jacobs contacted all individuals/groups by letter and email on November 25, 2024. On January 23, 2025, follow-up phone calls were made to contacts who had not yet responded to the Project letters.

5.3.4 Results

5.3.4.1 Literature Search

The literature search results were returned on November 16, 2024 (NWIC File No.: 24-0677).

5.3.4.1.1 Previously Recorded Resources

The records search results identified two previously recorded cultural resources, both built-environment resources, within the Project area: P-01-010947, the Contra Costa-Moraga/Pittsburg-Tesla PG&E Transmission Lines, and P-01-012411, the Kelso to Tesla Transmission Line. One additional previously recorded cultural resource, also a built-environment resource, identified from the records search intersects the architectural survey area: P-01-012293, the Bethany Reservoir. The resources located within the architectural survey area are summarized in Table 5.3-1.

The remaining nine previously recorded resources recorded within the study area include both precontact sites and historic-period resources. Precontact resources include milling stations, bedrock mortars, habitation sites with lithic scatter, and handstones. All historic-period resources identified from the record search are built structures, the remains of built structures, trash pits, and a reservoir. Additional information on known cultural resources within the study area is provided in Table 5.3-1.

Table 5.3-1. Previously Recorded Cultural Resources within the Study Area

Resource Number	Resource Type	Resource Description	Evaluation/Year
Within the Project Area			
P-01-010947	Historic era – architectural	Contra Costa-Moraga/Pittsburg-Tesla PG&E Electrical Transmission Lines	Recommended Eligible under Criteria A and C /2008
P-01-012411	Historic era – architectural	Kelso to Tesla Transmission Line	Recommended not Eligible for listing in the NRHP/2011

Resource Number	Resource Type	Resource Description	Evaluation/Year
Within the 1.0-Mile-Radius Study Area			
P-01-000119	Prehistoric	CA-ALA-000389, six bedrock mortars	Unevaluated/1990
P-01-000163	Historic	CA-ALA-441H. Historic ranch complex, buildings, and site, foundations/structure pads, water conveyance systems	Determined ineligible for listing in the NRHP/1983
P-01-000164	Historic	CA-ALA-442H, old homestead. Foundations/structure pads, privies, trash scatters, standing structures	Determined ineligible for listing in the NRHP/1983
P-01-012410	Historic era – site	MLS-PM-02 - a single feature of piled stones (cairn)	Unevaluated
P-01-002103	Historic	CA-ALA-395H, foundations/structure pads, privies trash scatters.	Unevaluated
P-01-011595	Prehistoric	CA-ALA-000678, sandstone milling station	Unevaluated
P-01-011596	Prehistoric	CA-ALA-000679, sandstone milling station	Unevaluated
P-01-011970	Prehistoric	CA-ALA-694, habitation site debris, mano fragments, basalt flakes	Unevaluated
P-01-012293	Historic era – architectural	Bethany Reservoir	Appears eligible for listing in the NRHP as a contributor to a district/ 2013
C-920	Unknown	A circular rock alignment	Unevaluated

Source: CHRIS NWIC. Refer to Appendix D of the Cultural Resources Technical Report for full references.

5.3.4.1.1.1 Contra Costa-Moraga/Pittsburg-Tesla PG&E 230- kV Transmission Lines (P-01-010947)

This resource is the Contra Costa-Moraga/Pittsburg to Tesla 230-kV transmission line which intersects the Project area within the architectural survey area. The line runs approximately 31 miles from Pittsburg Substation in Contra Costa County in the north to Tesla Substation near Midway in Alameda County at its southern terminus. The transmission line was constructed by PG&E ca. 1920-1943 (Supernowicz 2017). The transmission line was recorded in January 2008 described as built in 1959 to 1960 and was recommended as not eligible for listing in the NRHP by other consultants under any criteria (Garcia and Associates 2009).

The Pittsburg-Tesla Transmission Line was later reevaluated during an architectural evaluation study for the Sky Ranch II Project in Pittsburg and Antioch, California (Historic Resource Associates 2017; Supernowicz 2017). In this later study the authors concluded that the transmission line construction was considerably older than initially recorded and was most likely built in the late 1920s to the early 1940s. The 2017 evaluation therefore found the line eligible for the NRHP under Criterion A due to the property's relationship with PG&E and development of electrical power generation and transmission in Contra Costa County and the East Bay Area, and eligible under Criterion C for its early large-scale towers. This study concluded that the transmission line was eligible as a linear district with the towers and lines as contributing elements. However, the towers and lines are not individually eligible. It does not appear that this finding has received concurrence from OHP, and the transmission line is not listed in the NRHP or CRHR as of January 2025.

5.3.4.1.1.2 Kelso to Tesla Transmission Line (P-01-012411)

The Kelso to Tesla Transmission Line (P-01-12411) intersects the Project area within the architectural survey area. The section that intersects the Project area consists of overhead transmission lines supported by transmission towers and this resource was originally recorded in 2011.

This line originally connected the Tesla Substation to the Contra Costa Steam Plant. It was one of many transmission lines constructed in the 1950s during California's post- WW II population expansion to serve thousands of new PG&E customers in the East and South Bay. Today, this transmission line runs approximately 6 miles through the northeastern corner of Alameda County between the Kelso Substation and the Tesla Substation and has 45 towers. At a point just north of Bethany Reservoir, the alignment turns to the east to connect to the Kelso Substation, located approximately 0.5-mile southeast of the Delta Pumping Plant.

Planning for the line, historically named the Contra Costa Steam-Tesla Transmission Line, began in September 1949. Records indicate the towers were completed sometime between October and November of 1950. The line was fully operational by March 1951 and connected the Contra Costa steam power plant with the Tesla Substation. In 1993, engineers added a 1.5-mile diversion off the original alignment to connect the Tesla Substation to the Kelso Substation, which was also constructed during this time (PG&E GM File 10657; PG&E Drawing 231403 and 4004114) (AECOM 2011). This resource was determined ineligible for listing in the NRHP and CRHR, as it does not meet any of the criteria (Bowen 2011).

5.3.4.1.1.3 Bethany Reservoir (P-01-012293)

This resource is within the architectural survey area. The section of the resource that intersects the architectural survey area consists of the Bethany Reservoir, a water-storage feature.

The Bethany Reservoir is an earthen water storage facility, which also served as a forebay for the South Bay Aqueduct. The Bethany Forebay is located west of the reservoir, and both are irregularly shaped. Additional water control facilities at the reservoir and forebay include five dams, each with toe drains, and a weir. The Bethany Reservoir is a wide reach for the California Aqueduct at the aqueduct's northern end. This reservoir intersects the northern end of the architectural survey area. The reservoir was originally recorded in 2013 (Ambacher 2013) and the forebay, reservoir, dams, toe drains, and weir were recommended as not individually eligible for inclusion in the NRHP or CRHR under any criteria. This original recording, however, clarified that the Bethany Reservoir and its associated dams, toe drains, and outlet gates are part of the larger California Aqueduct. The reservoir and associated facilities were constructed in tandem with the aqueduct, were a part of the planned design, and considered ancillary infrastructure to the California Aqueduct.

The California Aqueduct was determined eligible for listing on the NRHP and the CRHR in July 2012 via a consensus determination with the CA State Historic Preservation Officer (SHPO) at the state level of significance under NRHP/CRHR Criterion A/1 for representing a comprehensively planned and publicly sanction water conveyance public works project that facilitated development throughout the state and determined eligible for listing under NRHP/CRHR Criterion C/3 for introducing design innovations to water conveyance infrastructure. The California Aqueduct was determined individually eligible for the NRHP in July 2012 via a consensus determination with the State Historic Preservation Officer (SHPO). Per the 2013 recording of the Bethany Reservoir, the 2012 Finding of Effect which precipitated the concurrence from SHPO states that ancillary structures such as reservoirs and dams are considered contributors to the California Aqueduct Historic District (Ambacher 2013). The California Aqueduct

Historic District does not appear to have had SHPO concurrence as a district as of January 2025, but instead is currently considered a muti-component individual resource with contributing features. It is recommended that the listing be altered from 2S2, individually determined eligible for NRHP by consensus through Section 106 process, and listed in the CRHR, to a 2D, contributor to a multi-component resource determined eligible for NRHP by the Keeper, listed in the CRHR, to accurately reflect the broad scope of the California Aqueduct's contributing features.

5.3.4.1.1.4 Previously Recorded Brushy Peak Tribal Cultural Resource

The Brushy Peak TCP, which encompasses Brushy Peak and vicinity, and the Brushy Peak Native American Cultural District, are previously reported and recorded tribal cultural resources located approximately 5 miles west-southwest of the Project area. The peak, at an elevation of approximately 1,700 ft AMSL, rises above the topography of the Altamont Pass. Additional information about this resource is provided in the confidential Cultural Resources Technical Report.

5.3.4.1.2 Previous Studies

The records search indicates that a total of 37 previous studies have been completed within the study area. Of these, 8 studies intersect the Project area, 15 are located within the 1-mile study area, but do not overlap the Project area, and 14 are general history or ethnographic studies that do not include archaeological or architectural surveys, archaeological test excavations, or archaeological monitoring and are not further discussed in this assessment. Although seven reconnaissance- to intensive-level pedestrian surveys have been conducted that include sections of the Project area, all studies are more than 5 years old.

A summary of the previously conducted cultural resources investigations within the Project area and study area is presented in Table 5.3-2. General studies and ethnographic studies are not included in this summary.

Table 5.3-2. Previous Cultural Resources Investigations within the Study Area

Report No. (NWIC-)	Report Title	Author & Date
Within the Project Area		
S-000121	*An Archaeological Reconnaissance of the Proposed Altamont Landfill Site, Alameda County, California*	David A. Frederickson and Peter M. Banks 1975
S-006007	*Archaeological Survey of the Wind Energy Company Project Area near Altamont Pass, Alameda County, California*	David A. Fredrickson 1983
S-006125	*An Archaeological reconnaissance of the Ralph Properties Windfarm Project Area, Altamont Pass, Alameda County, California*	Miley Paul Holman 1983
S-010724	*Report of the Cultural Resources Assessment of the Proposed San Joaquin Valley Pipeline*	Peak & Associates, Inc. 1986
S-012137	*An Archaeological Study of the Altamont Sanitary Landfill Expansion Project in Sections 15 and 16, Alameda County, California*	Jefferson Haney 1990

Report No. (NWIC-)	Report Title	Author & Date
S-043685	*Cultural Resources Inventory for the San Joaquin Valley Right-of-Way Maintenance Environmental Assessment Project*	Barb Siskin, Cassidy DeBaker, Thomas Martin, Beatrice Cox, and Jennifer Lang 2010
S-051534	*Cultural and Paleontological Overview for the San Joaquin Valley Pipeline Project*	Woodward-Clyde Consultants 1986
S-057685	*Final Cultural Resources Technical Report, Kelso Substation to Tesla Substation 230 kV, Reconductoring Project*	AECOM 2011
Within the Study Area		
S-005657	*An Archaeological Reconnaissance of Six Windfarm Parcels Near Altamont Pass, Alameda County, California*	Sarah E. Slater and Miley Paul Holman 1982
S-005862	*An Archaeological Reconnaissance of the Proposed Fayette Manufacturing Company Wind Farm on the Morgan, Shuff, Haera and Costello Properties, Altamont Pass, Alameda County, California*	Miley Paul Holman 1982
S-006489	*Archaeological Reconnaissance of the Gomes North Parcel, Alameda County, California*	Matthew R. Clark 1984
S-006502	*Proposed Windfarm at Christensen and Kelso Roads (Letter Report)*	Miley Paul Holman 1984
S-008942	*Archeology of the California State Water Project*	J. T. Ruckle 1974
S-010509	*Class III Intensive Archaeological Field Reconnaissance of the Kellogg Reformulation Unit, Highline Canal Alternative, Contra Costa and Alameda Counties*	Peter M. Jensen, Alfred Farber, and Neal Neuenschwander 1986
S-013453	*Cultural Resources Assessment, McDonald Island Gas Storage Expansion Project, Alameda, Contra Costa and San Joaquin Counties, California*	Donna M. Garaventa, Sondra A. Jarvis, Steven J. Rossa, and Melody E. Tannam 1991
S-014597	*Cultural Resources Assessment of the 230 kV Bethany Compressor Station Tap Project, Alameda County, California*	Michael R. Fong, Donna M. Garaventa, Stuart A. Guedon, Steven J. Rossa, and David G. Brittin 1991
S-018762	*Cultural Resources Evaluation of the Proposed Mountain House Planned Community, Alameda, and San Joaquin Counties, California*	Allen G. Pastron 1989
S-029590	*Cultural Resource Assessment of the South Bay Aqueduct Improvement and Enlargement Project, Alameda County, California*	Kyle Brown, Adam Marlow, Thomas Young, James Allan, and Willam Self 2004
S-035187	*Archaeological Survey Report, Clifton Court Forebay Delta Maintenance Project*	Tiffany A. Schmid 2008

Report No. (NWIC-)	Report Title	Author & Date
S-035796	*Cultural Resources Investigation and Architectural Evaluation of the Pittsburg-Tesla Transmission Line, Contra Costa and Alameda Counties, California*	Barbra Siskin, Cassidy DeBaker, and Jennifer Lang 2009
S-037943	*Review of Cultural Resources Studies for Section 106 Compliance: Altamont Landfill Expansion Area Project*	Robert Jackson and Patricia Welsh 2011
S-045214	*Cultural Resources Survey for FloDesign Wind Turbine, Inc. Proposed Sand Hill West Farm Repowering Project Alameda County, California*	Jenna L. Farrell 2013
S-049786	*Cultural Resources Assessment for Proposed Wind Generation Facility*	Joe L. Pope 1982

5.3.4.2 Historical Map and Aerial Imagery Review

The Project area was never included within any established Ranchos and therefore no hand-drawn diseño maps of the area exist. The Project area was located between Canada de los Vaqueros to the northwest, Las Positas to the southwest, and El Pescadero to the east (California State Archives 2024a and 2024b; Online Archive of California 2024). The boundaries of these Ranchos are all located approximately 2 to 5 miles from the Project area.

The 1857 BLM GLO survey plat map for Township 2 South Range 3 East shows the Project area in what the surveyor defined as “rolling land” and is not listed as being within any Rancho. No buildings or development are visible on this map in the Project area. A “new road” from San Jose to Stockton is depicted south of the Project area, as well as a telegraph line and an additional road, labeled “from San Jose to Stockton.” A dry creek is depicted bifurcating the Project area within Section 11 (GLO 2024). The 1874 BLM GLO survey plat maps for Township 2 South Range 3 East depict the Project area located to the east of the Rancho Canada de los Vaqueros boundary; but no development is shown within the Project area. The roads and telegraph line depicted in the 1857 survey plat map are no longer depicted in the 1874 plat maps and the land is designated as public land. An 1878 Thompson & West Map notes that Section 11 was owned by C. McLaughlin, and Section 10, where the Project area is located, was owned by William O’Brien, but no further mapping was available to substantiate these land claims (Thompson and West 1878). The map did not denote any development or structures within the study area (GLO 2024).

The 1914 Bethany, CA 1:31,680 USGS topographic quadrangle map depicts the study area as undeveloped land with two unimproved roads to the east and west of the Project area, respectively. A homestead is mapped approximately 0.22 mile south of the existing Ralph Substation, directly adjacent to the unimproved road; however, this is located outside of the study area. The dry creek depicted in the 1857 BLM GLO survey plat is also visible, running through the Project area. No other development was mapped (USGS 2024).

The 1952 Bethany, CA USGS topographic map shows similar conditions, except for the addition of a power line depicted running through the study area in a northwest/southeast linear orientation. This is likely the Contra Costa-Moraga/Pittsburg-Tesla electric transmission line (P-01-010947). A pipeline is also mapped to the southeast of the powerline. The powerline and pipeline are depicted as running through the study area in a northwest/southeast linear orientation. The pipeline is likely related to the reservoir and aqueduct. Two windmills are now labeled along an unimproved road to the southeast of the Project area. Aerial imagery from 1959 depicts similar conditions with other development within the study area. The map also depicts the Bethany Reservoir as being constructed approximately 1 mile north of the Project area. The reservoir connects with the California Aqueduct approximately 0.2 mile to the east of the study area. No other development is present within the study area.

The study area saw its most significant development in the mid-1960s when work on the SWP near the northern section of the study area began. Aerial photographs from 1966 depict the construction of the Bethany Forebay approximately 1 mile northwest of the study area. The entire reservoir complex was completed sometime between 1966 and 1968. This is likely the addition of the Kelso to Tesla transmission line (P-01-012411). Wind turbines for clean energy and an associated access road were also constructed during this time. The 1987 historic aerial image depicts the Ralph Substation within the Project area as well as multiple electrical power-generating windmills with several unimproved access roads to the west and southwest of the study area. (NETR 2024, USGS 2024).

Aerials from 1993 to 2022 (NETR 2024) as well as the 2012, 2015, 2018 and 2021 Clifton Court Forebay, CA USGS topographic maps (USGS 2024) depict the area in a similar condition: highly undeveloped, with no buildings or structures apart from the Bethany Reservoir, the powerlines, and the Ralph Substation. The area is considered rural, with no orchards or other agricultural activities depicted in any historic map or aerial (Google 2024; NETR 2024; USGS 2024).

5.3.4.3 Native American Outreach

The results of the search returned by the NAHC were received on October 25, 2024; these were negative for Native American cultural resources in the Project area and project vicinity. The record search conducted at the CHRIS NWIC also did not indicate the presence of Native American traditional cultural properties. The NAHC provided contact information for 28 tribal members and organizations affiliated with the region and recommended that they be contacted for more information on the potential for Native American cultural resources within or near the study area. Each of these individuals/groups was contacted by letter and email on November 25, 2024. Reponses to the November 25, 2024, letters and emails are discussed in this section.

Mr. Richard Massiatt of the Muwekma Ohlone Tribe, Inc. responded on December 8, 2024, expressing interest in the Project and invited further discussion in how they can assist with the Project. He noted that the Muwekma Ohlone Tribe offers Tribal Consultations as defined under Section 106, CEQA, Assembly Bill (AB) 52, Senate Bill (SB) 18 Consultation, and California Public Resources Code § 21080.3.1. If the Applicant works with the tribe for monitoring, and if necessary, burial recovery services, Mr. Massiatt offered the help of their Senior Tribal Archaeologist and Ethnohistorian, Alan Leventhal. Finally, Mr. Massiatt offered to send the Muwekma rate sheet for review. Ms. Natalie Lawson of Jacobs Engineering Group replied to Mr. Massiatt on January 16, 2025, stating that, although the CEC would conduct the AB 52 government-to-government consultation, Mr. Massiatt's request and a copy of his email will be included in the Cultural Resources Technical Report. Additionally, Ms. Lawson forwarded Mr. Massiatt's new mailing address to the NAHC, as requested on the same day.

Ms. Lucy Gill of the Confederated Villages of Lisjan Nation responded on December 4, 2024, that the Lisjan Nation looks forward to receiving an official request for consultation. Ms. Natalie Lawson of Jacobs Engineering Group replied to Ms. Gill on December 5, 2024, stating that, although the CEC will conduct the AB 52 government-to-government consultation, Ms. Gill's request and a copy of her email will be included in the Cultural Resources Technical Report.

On January 23, 2025, follow-up phone calls were made to contacts who had not yet responded to the project letters. Voicemails and messages were left where recipients' phones allowed for it. Mr. Gary Zimmer, Senior Cultural Monitor of the Amah Mutsun Tribal Band of Mission San Juan Bautista, requested that calls and questions be directed to Shelby Brown, Council Member of the Amah Mutsun Tribal Band of Mission San Juan Bautista. Councilwoman Brown was already contacted as she is also listed on the NAHC contact list.

No other responses have been received as of the date of this application. Copies of the letters are provided in the Cultural Resources Technical Report. Also, a detailed summary table of the results of correspondence with the individual Native American organizations on the NAHC contact list is included in the Cultural Resources Technical Report.

5.3.4.4 Historical Societies

On December 19, 2024, the Alameda Museum responded that the organization did not have any historical records within the Project area. On January 6, 2025, the Alameda County Parks, Recreation and Historical Commission responded that the organization did not have any historical records within the Project area. The correspondence is provided in the Cultural Resources Technical Report. No further correspondence has been received.

5.3.4.5 Archaeological Field Survey

An archaeological survey was completed on December 18, 2024; January 7, 2025; and January 14, 2025. Survey methods consisted of pedestrian transects spaced no more than 10 to15 meters apart. The archaeological survey area was situated within rolling hills with varying changes in topographic elevations and an understory of both native and invasive grasses. There are no trees in the vicinity. The majority of the Project area is located on a gentle slope, ranging from 5 to 10% and with remaining areas situated on a moderate slope, ranging from 15 to 25%).

Ground visibility was variable, ranging from poor at 10 to 25% in areas with dense grasses and other vegetation and gravels on the access roads, to fair at 25 to 50% in areas with cattle and rodent disturbances. Soils within the Project area generally consist of light brown to brown fine-grained sand with small with subrounded, subangular, and angular clasts. Disturbances from bioturbation, primarily rodent activity, off-road travel, cattle grazing, and access road maintenance was frequently observed in the survey area. Piles of large boulders were observed throughout the Project area and appear to have been excavated and placed in random piles during the construction of an underground gas pipeline and its associated access road. Although not developed, the Project area is also disturbed by an electrical transmission line and the access roads.

Surveyors attempted to observe Brushy Peak, where the Brushy Peak TCP and Brushy Peak Native American Cultural District, are located, from multiple vantage points within the Project area during the pedestrian survey. Surveyors noted that Brushy Peak is mostly obstructed by rolling hills and operational wind turbines in the surrounding landscape. The majority of the Project area is situated in low-lying areas, where the Brushy Peak TCP is completely obscured. The peak, only, is visible at higher elevations within the Project area. See Figures 5.3-1 and 5.3-2.

Figure 5.3-1. From the Project Area, Facing Directly Toward the Brushy Peak TCP, Facing West, the Peak Is Not Visible

Figure 5.3-2. From the Project Area Facing West, Looking Directly Toward the Brushy Peak TCP, the Peak Is Visible In The Distance

5.3.4.6 Architectural Survey

Based on the review of the county assessor's information, historical maps, and aerial imagery, no parcels in the architectural survey area were identified as containing built-environment properties that were more than 45 years old or exceptionally significant. Under direction from a senior architectural historian, a junior architectural historian completed a reconnaissance survey of the architectural survey area on December 18, 2024, and January 7, 2025. Additional photos were taken by archaeological surveyors on January 14, 2025. Three built resources, the Contra Costa-Moraga/Pittsburg-Tesla PG&E transmission line, the Kelso to Tesla transmission line, and the Bethany Reservoir, which were identified from the literature search, were revisited and reassessed during the architectural survey.

The architectural survey area consists of largely undeveloped land, and no additional built resources were identified from the survey. The architectural survey results are summarized in Table 5.3-3.

Table 5.3-3. Architectural Survey Results

P Number	Resource Name	Build Date	Eligibility
Architectural Resources within the Project Area			
P-01-010947	Contra Costa-Moraga/Pittsburg-Tesla Transmission Line	ca. 1920-1943	Eligible for the NRHP (Criteria A and C) and CRHR (Criteria 1 and 3) as a linear district.
P-01-012411	Kelso to Tesla Transmission Line	1950-1951	Not eligible for the NRHP or CRHR
0.5-Mile Buffer			
P-01-012293	Bethany Reservoir	1961-1967	Eligible for the NRHP (Criteria A and C) and CRHR (Criteria 1 and 3) as a contributor to the California Aqueduct Historic District. Not individually eligible.

5.3.4.6.1 Contra Costa-Moraga/Pittsburg-Tesla 230-kV Transmission Line (P-01-010947)

This resource is located in the architectural survey area and intersects the Project area and was revisited during the architectural survey. The section of the resource that intersects the Project area consists of overhead transmission lines supported by transmission towers and the line does not differ from the description in the 2017 site record (Supernowicz 2017). Survey found the condition of the transmission line to be good. The reassessment completed for this Project found the resource still possesses a high degree of integrity, as it remains in the same location, and its integrity of association, setting and feeling also remain good as the line continues to transport electricity in the rural Altamont Pass, and its workmanship, materials, and design also remains good, as the current aspects are similar to the lines original utilitarian style. The lines should continue being eligible for the NRHP as a linear district, and the property is additionally eligible for the CRHR under Criteria 1 and 3 and is therefore a historic resource for the purposes of CEQA.

The 2017 reevaluation of the transmission lines did not include information on a proposed historic property boundary or the character-defining features of the district. This recording proposes that the historic property boundary should be limited to the footprint of the towers and contributing lines as a linear feature. Contributing features include the steel towers, insulators, and transmission line. Character-defining features include the transmission lines historic alignment, its continued use as power conveyance, and the lines extant steel towers. Any remaining towers that date to the period of its construction, between 1920 and1943, should be given special consideration, but their replacement as part of routine infrastructure maintenance is inevitable and should not be considered a high-level character-defining feature.

5.3.4.6.2 Kelso-Tesla 230-KV Transmission Line (P-012411)

This resource is within the architectural survey area and intersects the Project area. The section of the resource that intersects with the Project area consists of overhead transmission lines supported by transmission towers and was originally recorded in 2011.

P-01-012411 has been found not eligible for listing under California Historical Resources Status Code 6Z (found ineligible for the NRHP, CRHR, or as a Local destination through survey evaluation) (Bowen 2011). The property is therefore not a historical resource per CEQA.

5.3.4.7 Bethany Reservoir (P-01-012293)

This resource is within the architectural survey area. The section of the resource that intersects with the architectural survey area consists of the Bethany Reservoir, a water-storage feature.

Survey found the condition of the reservoir to be good, and the resource still possesses a high degree of integrity; it is in the same location as at construction; it maintains the same setting, feeling, and association as a water conveyance in the rural Altamont Pass; and it has similar design, materials, and workmanship to its period of construction. It should continue being eligible as a contributor to the California Aqueduct. The reservoir continues to be ineligible individually for the NRHP or CRHR.

5.3.4.8 Brushy Peak TCP and Brushy Peak Native American Cultural District

The peak is primarily obstructed by the rolling hills surrounding the Project. Only on the highest part of the Project area, could the top of Brushy Peak be viewed; the view presently contains numerous wind turbines.

5.3.5 Environmental Analysis

This section describes the environmental impacts of Project construction and operation.

5.3.5.1 Summary of Results

The cultural resources assessment included background and archival research, development of a historic context and research design, an intensive pedestrian survey of the archaeological survey area and a reconnaissance survey of the architectural history survey area, and resources documentation and evaluation. As a result of these efforts, two historic period cultural resources were identified in the Project area and one historic period cultural resource was identified in the architectural survey area, all of which are built-environment resources (Table 5.3-3). Two of the identified resources are recommended eligible for listing on the NRHP and the CRHR by other consultants and reassessed for this Project. They remain recommended eligible.

The Brushy Peak TCP and Brushy Peak Native American Cultural District were identified within the ethnographic review area. The peak is primarily obstructed by the rolling hills surrounding the Project. The top of Brushy Peak could be viewed only from the highest part of the Project area; the view contains numerous wind turbines. The majority of the Project area is located in low-lying areas and, given the reciprocal view of the Project from the peak through wind turbines, and including the extant substation, no significant changes to the viewshed are anticipated from the Project.

No precontact cultural resources were identified within the Project area. As no archaeological resources were identified during the survey, discussion of any of the research questions posed can be completed. Due to the paucity of available freshwater sources in the vicinity, the low density of known precontact archaeological sites in the immediate area, and the deposition environment of the Project area, the sensitivity of the Project area for containing intact buried prehistoric archaeological resources is considered low. Furthermore, the lack of intensive development of the Project area during the historic period suggests the potential to encounter buried historic archaeological resources during Project construction is relatively low. Therefore, potential impacts from construction and operation are expected to be less than significant.

5.3.5.2 Significance Criteria

Appendix G, Environmental Checklist Form of the CEQA guidelines, addresses significance criteria with respect to cultural resources (PRC Sections 21000 et seq.). Appendix G (V) (a, b, d) indicates that an impact may be significant if the project will have the following effects:

- Cause a substantial adverse change in the significance of a historical resource
- Cause a substantial adverse change in the significance of an archaeological resource
- Disturb any human remains, including those interred outside formal cemeteries

The Contra Costa-Moraga/Pittsburg-Tesla PG&E Transmission Lines (P-01-010947) and the Bethany Reservoir (P-01-012293) have been previously evaluated as eligible for listing in the NRHP and CRHR, and are therefore historical resources for the purposes of CEQA. Under the proposed Project, the physical aspects of integrity of the Contra Costa-Moraga/Pittsburg-Tesla PG&E Transmission line, including the location, design, materials, and workmanship of the general alignment of the transmission line, will remain as they are currently. The structure's feeling and association as a transmission line will not be altered as a result of any changes from project implementation. The low profile and small footprint of the proposed BESS structure will have a minimal impact on the rural and undeveloped landscape.

The Bethany Reservoir, specifically, the forebay, reservoir, toe drains, and weir, was recommended as not individually eligible for the NRHP under any criteria by other consultants. However, the property was found to be a contributor to the California Aqueduct Historic District. The California Aqueduct runs out of the Bethany Reservoir to the southeast outside the Project area (Ambacher 2013). The California Aqueduct was determined eligible for listing on the NRHP and CRHR at the state level of significance under NRHP/CRHR Criterion A/1 and NRHP/CRHR Criterion C/3 in July 2012 via a consensus determination with the State Historic Preservation Officer. Per the 2013 recording of the Bethany Reservoir (Ambacher 2013), the 2012 Finding of Effect which precipitated the concurrence from SHPO states that ancillary structures such as reservoirs and dams are considered contributors to the California Aqueduct Historic District. Thus, the Bethany Reservoir and Forebay are character-defining features of the California Aqueduct and appear to meet the criteria for listing in the NRHP and the CRHR as contributing elements of the California Aqueduct Historic District. The proposed Project will not affect any physical aspect of integrity, including the location, design, materials, and workmanship of the Bethany Reservoir, which will remain as they are currently. The structure's feeling and association as a reservoir will not be altered by Project implementation. Because of the topography of the area, the Project will not be visible from the reservoir, preserving its current setting.

Project implementation will not alter, directly or indirectly, any of the characteristics of the Contra Costa-Moraga/Pittsburg-Tesla PG&E Transmission Line or the Bethany Reservoir that qualify these historical resources for inclusion in CRHR. Additionally, both historical resources retain the purpose for which they were built. The introduction of these new physical elements will not diminish the seven aspects of integrity (location, design, setting, materials, workmanship, feeling, and association) of either historical resource to a level at which the resource will fail to convey its significance, and thus a finding of less-than-significant impact on the Contra Costa-Moraga/Pittsburg-Tesla PG&E Transmission Line and the Bethany Reservoir as stipulated in PRC § 21084.1, 14 CCR § 15064.5(3) is recommended.

The Kelso to Tesla Transmission Line (P-01-012411) has previously been evaluated as not eligible for listing in the NRHP or CRHR and therefore is not a historical resource for the purposes of CEQA.

No archaeological sites or human remains were documented in the Project area. Therefore, the Project will not result in a substantial adverse change in the significance of known archaeological resources or human remains. Impacts on previously unidentified cultural resources or human remains are possible during construction and/or operation. With the incorporation of mitigation measures described in Section 5.3.6, construction impacts on archaeological resources and human remains are expected to be less than significant.

5.3.6 Mitigation Measures

No archaeological sites were found during the survey of the Project area. Based on site-specific variables—the age and composition of underlying landform, proximity to freshwater sources, known archaeological sites in the study area, and the extent of past disturbances—the overall potential for the discovery of intact archaeological deposits, including buried archaeological deposits, materials, or features, by implementation of the Project is estimated to be low. The likelihood of encountering archaeological resources in the Project area is considered to be low.

As a result, the following measures are recommended, based on state and agency regulations and guidelines, to mitigate any potential adverse impacts that could occur if there were an inadvertent discovery of buried cultural resources. These measures include the following:

- Designation of a Cultural Resources Specialist (CRS) to investigate any cultural resource finds made during construction
- Implementation of a construction worker training program to ensure implementation of procedures to be followed if cultural resources are discovered during construction, including steps to be taken for unanticipated discovery of cultural materials.
- Procedures for halting construction in the event of an inadvertent discovery of archaeological deposits or human remains
- Procedures for evaluating an inadvertent archaeological discovery
- Procedures to mitigate adverse impacts on any inadvertent archaeological discovery determined to be significant

5.3.7 Laws, Ordinances, Regulations, and Standards

The LORS discussed in this section pertain to ordinances, plans, and policies of federal, state, and local governments. Table 5.3-4 presents a summary of the applicable LORS.

Table 5.3-4. Summary of Laws, Ordinances, Regulations, and Standards for Cultural Resources

LORS	Requirements Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Federal			
Section 106, NHPA	Applies if the project would require a federal permit (such as a PSD permit). The lead federal agency must take into account the effect of issuing the permit on significant cultural resources.	California Office of Historic Preservation	N/A
State			
Warren-Alquist Act	Requires cultural resources to be considered in consideration of an AFC.	CEC	Section 5.3.5.6

LORS	Requirements Applicability	Administering Agency	Application for Certification Section Explaining Conformance
CEQA Guidelines	Project construction may encounter archaeological and/or historical resources.	CEC	Section 5.3.2.1
Health and Safety Code Section 7050.5	Construction may encounter Native American graves; coroner calls the NAHC.	State of California	Section 5.3.5
PRC Section 5097.98	Construction may encounter Native American graves; NAHC assigns Most Likely Descendant.	State of California	Section 5.3.5
PRC Section 5097.5/5097.9	Would apply only if some project land were acquired by the state (currently no state land).	State of California	N/A
Local			
Alameda County East County General Plan	Recognizes importance of cultural and historical resources and includes policies to protect cultural resources	Alameda County	N/A

5.3.7.1 California Environmental Quality Act

The proposed Project is subject to compliance with CEQA, as amended. Compliance with CEQA statutes and guidelines requires both public and private projects with financing or approval from a public agency to assess the Project's impact on cultural resources (PRC Sections 21082, 21083.2 and 21084 and California Code of Regulations [CCR] 10564.5). The first step in the process is to identify cultural resources that may be impacted by the Project and then determine whether the resources are "historically significant" resources.

CEQA defines historically significant resources as "resources listed or eligible for listing in the California Register of Historical Resources (CRHR)" (PRC Section 5024.1). A cultural resource may be considered historically significant if the resource is 45 years old or older, possesses integrity of location, design, setting, materials, workmanship, feeling, and association.[1] In addition, it must meet at least one of the following criteria for listing in the CRHR:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,
4. Has yielded, or may be likely to yield, information important in prehistory or history (PRC Section 5024.1).

[1] The Office of Historic Preservation (OHP) guidelines recognize a 45-year-old criteria threshold for documenting and evaluating cultural resources (assumes a 5-year lag between resource identification and the date that planning decisions are made) (OHP 1995:2). The age threshold is an operational guideline and not specific to CEQA statutory or regulatory codes.

Cultural resources are buildings, sites, humanly modified landscapes, traditional cultural properties, structures, or objects that may have historical, architectural, cultural, or scientific importance. CEQA states that if a project will have a significant impact on important cultural resources, deemed "historically significant," then project alternatives and mitigation measures must be considered.

Historical resources eligible for listing in the CRHR must also retain enough of their historic character or appearance (integrity) to be recognizable as historical resources and to convey the reasons for their significance. For the purposes of eligibility for the CRHR, integrity is defined as the presence of a historical resource's characteristics which existed during that resource's period of significance (OHP, no date). The evaluation of integrity must be grounded in an understanding of a resource's physical features and how they relate to the concept of integrity. Determining which of these aspects are most important to a resource requires knowing why, where, and when a resource is significant. To retain historic integrity, a resource must possess several, and usually most, aspects of integrity:

1. **Location** is the place where the historical resource was constructed or the place where the historic event occurred.
2. **Design** is the combination of elements that create the form, plan, space, structure, and style of a resource.
3. **Setting** is the physical environment of a historical resource and refers to the character of the site and the relationship to surrounding features and open space. Setting often refers to the basic physical conditions under which a resource was built and the functions it was intended to serve. These features can be either natural or manmade, including vegetation, paths, fences, and relationships between other features or open space.
4. **Materials** are the physical elements that were combined or deposited during a particular period or time, and in a particular pattern or configuration to form a historical resource.
5. **Workmanship** is the physical evidence of crafts of a particular culture or people during any given period of history or prehistory and can be applied to the resource, or to individual components.
6. **Feeling** is a resource's expression of the aesthetic or historic sense of a particular period. It results from the presence of physical features that, when taken together, convey the resource's historic character.
7. **Association** is the direct link between the important historic event or person and a historical resource.

5.3.7.2 Impacts Assessment Criteria

PRC Section 21084.1 states that significant impacts may occur if "a project may cause a substantial adverse change in the significance of an historical resource." CEQA Guidelines use the terms effects and impacts interchangeably. Section 15064.5(b)(1) provides that a substantial adverse change to a historic resource occurs if there is "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." As outlined in 14 CCR Section 15064.5(b)(2), the significance of a historical resource is materially impaired when a project:

A. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR; or

B. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the PRC or its identification in a historical resources survey meeting the requirements of Section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

C. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

CEQA defines three types of effects:

1. **Direct** or primary effects that are caused by a project and occur at the same time and place.
2. **Indirect** or secondary effects that are reasonably foreseeable and caused by a project but occur at a different time or place.
3. Cumulative impacts that are two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

5.3.7.3 Assessing Visual Impacts

The process to determine significant impacts includes not only direct impacts, but potential indirect visual impacts. The CEQA definition of a substantial adverse change includes "alteration such that the significance of an historical resource or its immediate surroundings would be materially impaired." Although demolition and destruction are obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. Therefore, for an alteration to be considered a substantial adverse change, it must be shown that the integrity and/or significance of the historical resource would be materially impaired by the change in views towards or from a historic resource.

Adverse visual impacts may be created when an undertaking is visible within the viewshed of the historical resource, when it blocks a view toward the historical resource, or when it introduces an element that is incompatible with the criteria under which the resource is eligible. Simply because a project will be visible from a historical resource does not mean it automatically will create a significant impact. Thus, it is necessary to evaluate the visual changes and alterations a proposed project may introduce to the resource.

An adverse impact may be obstructive, which is to say it may block the view to or from a historical resource; it may also not be obstructive and still create an adverse impact in that it introduces elements so incompatible with the criterion or criteria under which a historical resource is eligible for listing that it diminishes the resource's significance to a substantial degree.

5.3.7.4 Mitigation of Adverse Impacts

Mitigation of adverse impacts is required if a proposed project will cause substantial adverse change to a historical resource (14 CCR Section 15064.5[b]). Mitigation measures must be enforceable through permit conditions, agreements, or other legal means and are proportional to the expected impacts. The measures seek to reduce impacts entirely or to a level considered not significant (14 CCR Section 15126.4). Mitigation measures for historical resources may include but are not limited to:

1. Altering a proposed project to avoid damaging effects on any historical resource in a significant manner, such as by not taking a certain action or parts of an action.

2. Rectifying impacts through maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation, or reconstruction of the historical resource in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

3. Documentation of the historical resource, by way of historic narrative and photographs or architectural drawings meeting California OHP recommendations prior to demolition.

4. Deeding the site into a permanent conservation easement.

5. Abandonment of the proposed project.

CEQA Section 15064.5(b)(3) states that a project that follows the *Secretary of the Interior's Standards for the Treatment of Historic Properties* shall be considered as mitigated to a level of less-than-a-significant impact on the historical resource.

5.3.7.5 Assembly Bill 52

Signed into law in September 2014, AB 52 created a new class of resources – tribal cultural resources – for consideration under CEQA. Tribal cultural resources may include sites, features, places, cultural landscapes, sacred places, or objects with cultural value to a California Native American tribe that are listed or determined to be eligible for listing on the CRHR, included in a local register of historical resources, or a resource determined by the lead CEQA agency, in its discretion and supported by substantial evidence, to be significant and eligible for listing on the CRHR. AB 52 requires that the lead CEQA agency consult with California Native American tribes that have requested consultation for projects that may affect tribal cultural resources. The lead CEQA agency shall begin consultation with participating Native American tribes prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report. Under AB 52, a project that has potential to cause a substantial adverse change to a tribal cultural resource constitutes a significant effect on the environment unless mitigation reduces such effects to a less-than-significant level.

5.3.7.6 Assembly Bill 205

The CEC is the primary energy policy and planning agency in California. In 2022, AB 205 (AB 205) was passed, expanding the CEC authority, allowing the agency to overseed the permitting of clean and renewable energy facilities, including energy storage systems, such as the Project. This Opt-In Certification Program gives developers an optional pathway that facilitates project applications and faster approval of renewable energy facilities.

5.3.7.7 Alameda County General Plan, East County Area Plan

The Alameda County General Plan consists of several documents that discuss specific geographic areas in detail in various parts of the county, as well as general plan elements for housing, safety, conservation, open space, noise, and recreation. The Project area is included in the East County Area Plan (Alameda County 2002).

The East County Area Plan recognizes the importance of cultural and historic resources and includes the following policies to protect cultural resources during development:

- **Policy 136:** Identify and preserve significant archaeological and historical resources that contribute to the heritage of the East County area.
- **Policy 137:** Requires development to be designed to avoid cultural resources or offset impacts with appropriate mitigation measures if avoidance is determined to be infeasible.

The East County Area Plan also requires an Implementation Program, labeled under **Program 59**, which includes the following:

- Requires a background record check of all project areas if the project is located within an extreme or high archaeological sensitivity zone as determined by the County.
- If there is evidence of an archaeological site within the proposed project area, an archaeological survey by a qualified professional is required as a part of the environmental assessment process.
- If any archaeological sites are identified during construction, all work in the immediate vicinity should be suspended pending a site investigation by a qualified professional.
- Proposed structures or roads on a property that contains archaeological sites should be sited in consultation with a professional to avoid damages.
- The County shall follow CEQA Guidelines for cultural resource preservation procedures in reviewing development projects located near known cultural resources.
- Appropriate measures for preserving can include renovation or moving to another location. If there is a proposal to remove historic structures, it will need to be reviewed by qualified professionals.

5.3.7.7.1 Alameda County Historic Preservation Ordinance

In 2012, the Alameda County Board of Supervisors adopted a historic preservation ordinance that codified the definition and maintenance of the Alameda County Register of Historic Resources, how properties can be added or removed from the county register, and what activities may be subject to review. The ordinance also provided incentives for the preservation of historic resources (Alameda County 2023).

5.3.8 Agencies and Agency Contacts

Table 5.3-5 lists the agencies involved in cultural resources management for the Project and a contact person at each agency.

Table 5.3-5. Agency Contacts for Cultural Resources

Issue	Agency	Contact
Native American Traditional Cultural Properties	Native American Heritage Commission	Cynthia Gomez, Executive Secretary Native American Heritage Commission 1550 Harbor Boulevard, Suite 100 West Sacramento, CA 95691 (916) 373-3710
Inadvertent Discovery of Human Remains	Alameda County Coroner	2901 Peralta Oaks Court, 2nd Floor Oakland, CA 94605 510-382-3450
Inadvertent Discovery of Cultural Resources	CEC	Compliance Project Manager
Federal Agency NHPA Section 106 compliance	California Office of Historic Preservation	Julian Polanco State Historic Preservation Officer 1423 23rd Street, Suite 100 Sacramento, CA 95816 (916) 445-7000

NHPA = National Historic Preservation Act

5.3.9 Permits and Permit Schedule

Other than certification by the CEC, no state, federal, or local permits are required by the Project for the management of cultural resources. Consultation with the SHPO will not be required under Section 106 of the NHPA because the Project will not require a Prevention of Significant Determination or a federal permit.

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5.4 Geological Hazards and Resources

This section presents an evaluation of the Viracocha Hill Battery Energy Storage System Project (Viracocha Hill BESS or Project) in terms of potential exposure to geological hazards and potential to affect geologic resources of commercial, recreational, or scientific value. Section 5.4.1 describes the existing environment that could be affected, including regional and local geology and geological hazards. Section 5.4.2 identifies potential environmental effects from Project development. Section 5.4.3 discusses potential cumulative effects. Section 5.4.4 discusses mitigation measures. Section 5.4.5 presents the laws, ordinances, regulations, and standards (LORS) applicable to geological hazards and resources. Section 5.4.6 identifies regulatory agencies and agency contacts. Section 5.4.7 describes the required permits. Section 5.4.8 provides the references used to develop this section.

5.4.1 Affected Environment

The Project is located in the Altamont Hills in Alameda County, California, adjacent to the proposed Sand Hill Wind Repower Project. The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

5.4.1.1 Regional Geology

The Project is located in the Diablo Range of the Coast Ranges Geomorphic Province in Alameda County. The Coast Ranges are northwest-trending mountain ranges (2,000 to 4,000, occasionally 6,000 feet elevation above sea level), and valleys. The ranges and valleys trend northwest, subparallel to the San Andreas Fault. Strata dip beneath alluvium of the Great Valley. To the west is the Pacific Ocean. The coastline is uplifted, terraced, and wave-cut. The Coast Ranges are composed of thick Mesozoic and Cenozoic sedimentary strata. Bedrock of various types and age underlie the areas within the Diablo Range. Almost all the hills have a mantle of topsoil and weathered bedrock. These soil materials vary in depth and may present a substantial slope instability hazard.

5.4.1.2 Local Geology and Stratigraphy

Geologic resources underlying the Project site include Panoche Formation, which is not unique in terms of recreational or scientific value and which occurs throughout eastern Alameda County. The Project site encompasses flat to rolling topography. The subsurface of the Project site is made up of Panoche Formation. (Figure 5.4-1, Surface Geology). The Panoche Formation is a Cretaceous-age geologic unit in the San Joaquin Valley. It rests unconformably on Franciscan formation and is conformably overlain by Moreno formation, the upper formation of Chico group. It consists of alternating beds of dark thin-bedded clay shale and massive gray concretionary sandstone aggregating 9,500 to more than 20,000 feet in thickness. The formation also includes some arenaceous shale, platy sandstone, and beds of coarse conglomerate, which locally attain great thicknesses. The lowest beds here included in the Panoche formation are nonfossiliferous and may represent Knoxville formation, which is believed to be absent. Age is Late Cretaceous. It is named from development in Panoche Hills, Diablo Range, Fresno County, and southern California (Anderson and Pack 1915).

A mineral resource is the concentration or occurrence of a solid material of economic interest in or on the Earth's crust in such form, grade, or quality and quantity that there are reasonable prospects for eventual economic extraction. Alameda County contains a variety of minerals, both metallic and nonmetallic. Major mineral resources include sand and gravel, salt, stone, petroleum, and clays. Mineral extraction in the county has included asbestos, bromine, chromite, coal, copper, gold, lead, lime, magnesite, magnesium compounds, manganese, potash (potassium salts), pyrite, silica (molding or specialty sand), silver, soapstone, and travertine (Alameda County 1994).

An aggregate resource is sand, gravel, and crushed stone that has been mechanically broken down and is of economic interest. Alameda County is a principal source of aggregate materials for the San Francisco Bay Area. Much of the sand and gravel used in the Bay Area is obtained from open pit mines in deposits near Fremont and Pleasanton. Most of the county's sand and gravel production is obtained from stream channel and alluvial fan deposits. Sand and gravel are the county's most valuable mineral resources (Alameda County 1994). The California Division of Mines and Geology (CDMG) classifies the regional significance of mineral resources in accordance with the California Surface Mining and Reclamation Act (SMARA) of 1975, using a classification system that divides land into four mineral resource zones (MRZs) that have been designated based on quality and significance of mineral resources. The Project is not located within a designated MRZ (CDMG 1996), and no mines or gravel pits are located in the vicinity of the Project (DOC, Division of Mine Reclamation 2016).

The California Geologic Energy Management Division (CalGEM) provides locations of active and abandoned oil and gas wells in California. The Project is not located in a designated CalGEM oil/gas field and no oil/gas wells are located in the vicinity of the site (CalGEM 2024).

The two soil types found in the Project area are Altamont rocky clay, moderately deep (7 to 30% slopes) and San Ysidro loam, 0 to 2% slope. The Altamont rocky clay (map unit ArD), underlies the Project site, and is well drained and capacity of the most limiting layer to transmit water is very low. The typical profile of this soil type is 28 to 32 inches to weathered bedrock and 18 to 36 inches to paralithic bedrock. San Ysidro loam (map unit Sa), located north of the Project boundary, is a moderately well-drained soil and capacity of the most limiting layer to transmit water is moderately low to moderately high. Neither soil type has frequency of flooding or ponding (NRCS 2024).

Subsurface conditions are described in greater detail in the Geotechnical Investigation (Appendix 5.4A) and supplemental memorandum from Berlogar Stevens & Associates (Appendix 5.4B).

5.4.1.3 Faulting and Seismicity

The Project is located in a geologically complex and seismically active region that is subject to earthquakes and potentially strong ground shaking. The California Geological Survey (CGS) classifies faults as age-undetermined, Holocene-active, or pre-Holocene. An "active fault" is defined as one which has "had surface displacement within Holocene time" (the last 11,700 years). Faults that have not moved in the past 11,700 years are considered pre-Holocene faults, also known as potentially active faults. An age-undetermined fault is a fault whose age of most recent movement is not known or is unconstrained by dating methods or by limitations in stratigraphic resolution (CGS 2018). CGS fault classifications are in part used to determine locations of Alquist-Priolo Fault Zones, which are regulatory zones that encompass the minimum distance for human occupancy from active faults that have the potential for surface rupture. No structures designed for human occupancy can be placed over the fault or within 50 feet in any direction. No Alquist-Priolo Fault Zones are located in the vicinity of the Project. The closest such zone is located approximately 6 miles southwest of the site, along the Greenville Fault (CDMG 1981, 1982).

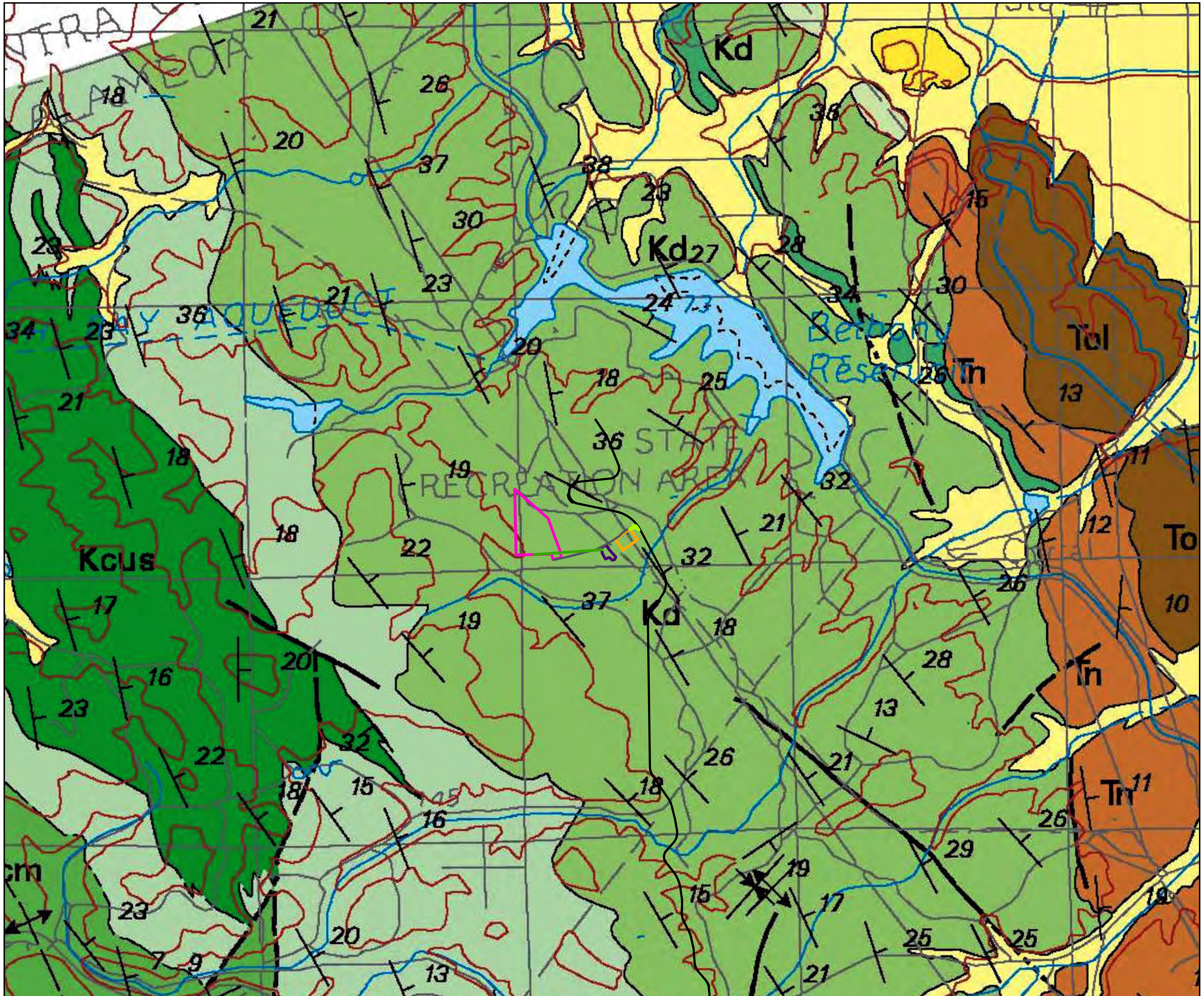
The U.S. Geological Survey (USGS) classifies faults using Quaternary age, of which the most recent (less than 15,000 years, well constrained) is similar to the Holocene-active faults that are classified by the CGS (USGS 2024a).

Ground rupture is caused when an earthquake event along a fault result in rupture of the surface. As shown on Figure 5.4-2, the Project is not transected by any known active or potentially active faults (CGS 2015). The known active and potentially active faults in the vicinity of the Project are shown on Figure 5.4-2. The Midway Fault is the closest potentially active fault, located approximately 2 miles southeast of the Project (CGS 2024a, USGS 2024a).

The nearest mapped Earthquake Fault Zone (EFZs) are associated with the Hayward Fault Zone approximately 25 miles to the west of the site and the San Andreas Fault approximately 40 miles to the west of the site (CGS 2015). The likelihood of a ground rupture to occur from movement along an active fault at the Project is considered low.

The Safety Element of the Alameda County General Plan states that the county has been subjected to numerous seismic events, originating both on faults within the county and in other parts of the region. Six major Bay Area earthquakes have occurred since 1800 that have affected the county, and at least two of the faults that produced those major earthquakes traverse the county. These earthquakes and the originating faults include the 1836 and 1868 earthquakes on the Hayward-Rogers Creek Fault and the 1861 earthquake on the Calaveras Fault. Three earthquakes, in 1838, 1906, and 1989, originated on the San Andreas Fault, west of the county near San Francisco or to the south (Alameda County 2022).

According to the Association of Bay Area Governments (ABAG), the region has experienced 22 earthquakes of magnitude 6 or greater in the past 150 years. Currently, there is a 72% chance over the next 30 years of a magnitude 6.7 or greater in the region. In the event of an M 6.8 earthquake on the Concord-Green Valley Fault System, the seismic forecasts presented on ABAG's interactive GIS website suggest that the Project is expected to experience moderate ground shaking. In the event of an M 7.0 earthquake on the Calaveras Fault, the seismic forecasts presented on ABAG's interactive GIS website suggest that the Project is expected to experience strong ground shaking (ABAG 2021, 2022, 2024).



Legend

- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)

Source:
1) ESRI Aerial Images

0 0.5 1
Miles

Figure 5.4-1
Surface Geology within 1 Mile of Project Site
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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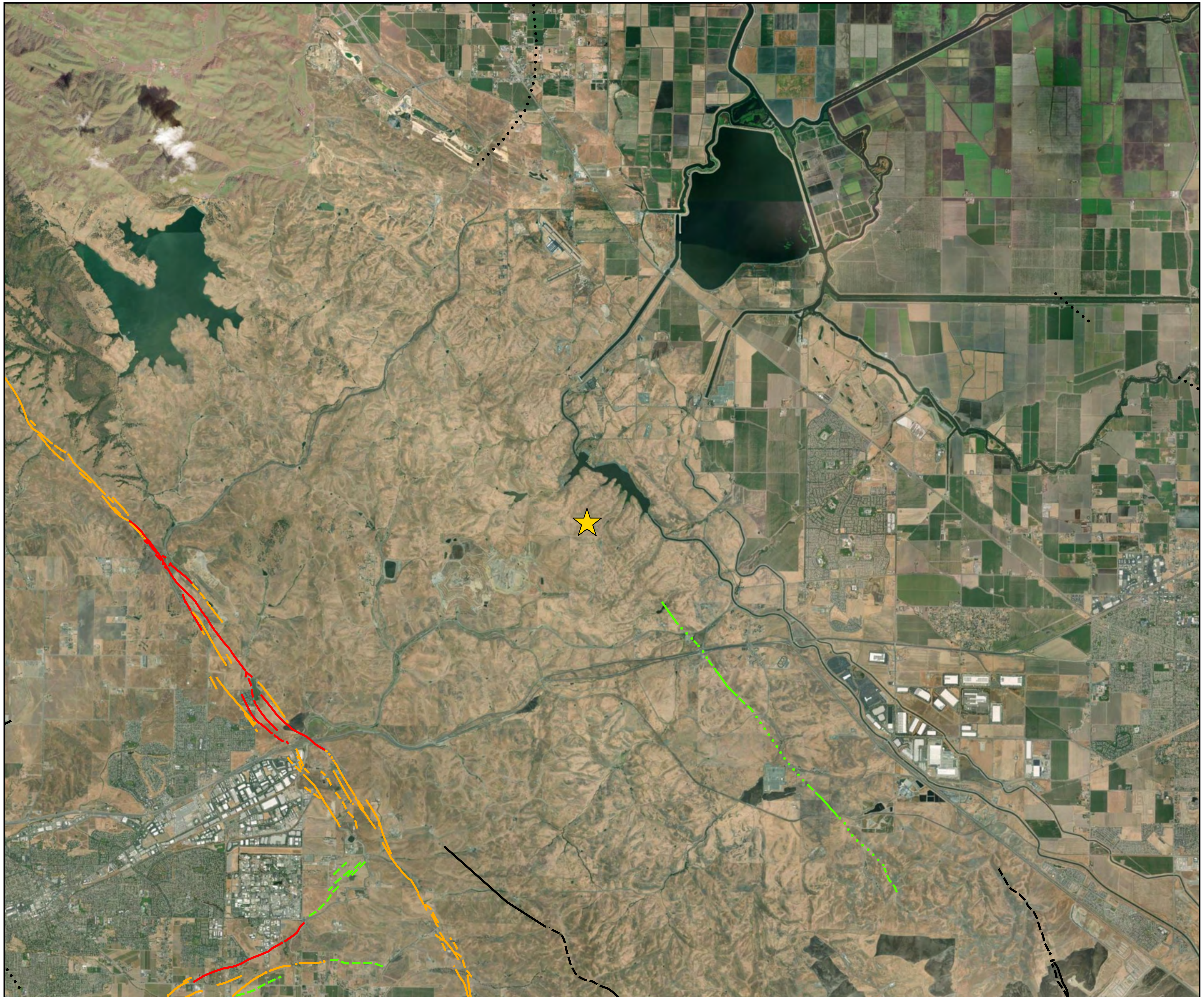

Legend

Viracocha Hill BESS Project

USGS Quaternary Faults

- historical (<150 years), well constrained location
- historical (<150 years), moderately constrained location
- historical (<150 years), inferred location
- latest Quaternary (<15,000 years), well constrained location
- latest Quaternary (<15,000 years), moderately constrained location
- latest Quaternary (<15,000 years), inferred location
- late Quaternary (<130,000 years), well constrained location
- late Quaternary (<130,000 years), moderately constrained location
- late Quaternary (<130,000 years), inferred location
- undifferentiated Quaternary(<1.6 million years), well constrained location
- undifferentiated Quaternary(<1.6 million years), moderately constrained location
- undifferentiated Quaternary(<1.6 million years), inferred location

Source:
1) ESRI Aerial Images

N

0 2 4
Miles

Figure 5.4-2
Regional Fault Map
Viracocha BESS Project
Alameda County, California

Jacobs

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5.4.1.3.1 Liquefaction

Liquefaction is a phenomenon in which saturated, cohesionless soils, such as sand and silt, temporarily lose their strength and liquefy when subjected to dynamic forces, such as intense and prolonged ground shaking. To be susceptible to liquefaction, potentially liquefiable soils must be saturated or nearly saturated. In general, liquefaction hazards are most severe in saturated soils within the upper 50 feet of the ground surface. The potential for liquefaction increases with shallower groundwater. The potential hazards associated with liquefaction are ground deformation (soil densification) and lateral spreading.

The CGS has designated certain areas as potential liquefaction hazard zones. These are areas considered at a risk of liquefaction-related ground failure during a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table. However, the CGS has not determined the liquefaction susceptibility within the USGS 7.5-Minute Clifton Court Forebay quadrangle, in which the Project is located (CGS 2024b).

Natural Resources Conservation Service (NRCS) mapping indicates the soil type underlying the Project typically has 28 to 32 inches to weathered bedrock and 18 to 36 inches to paralithic bedrock (NRCS 2024). As a result, liquefaction is not anticipated at the Project. Subsurface conditions are described in greater detail in the Geotechnical Investigation (Appendix 5.4A) and supplemental memorandum from Berlogar Stevens & Associates (Appendix 5.4B).

5.4.1.3.2 Landslides

A landslide is a mass of rock, soil, or debris that has been displaced downslope by sliding, flowing, or falling. There is a low probability of landslides in the project area because of the relatively flat topography and distance from hills, mountains, or slopes. Similar to liquefaction, the CGS has not determined the seismically induced landslide susceptibility within the USGS 7.5-Minute Clifton Court Forebay quadrangle, in which the Project is located (CGS 2024b). The Alameda County Local Hazard Mitigation Plan indicates the Project is located in an area of “few landslides” and low “deep-seated landslide susceptibility” (Alameda County 2021).

5.4.1.3.3 Subsidence

Subsidence, which is the downward displacement of a large portion of land, has affected many areas in California. In areas with shallow groundwater, liquefaction is more likely to occur in the event of significant seismic shaking. The potential for ground subsidence from earthquake motion is largely dependent on the magnitude, duration, and frequency of the earthquake waves. Subsidence is any settling or sinking of the ground surface over a regional area typically because of groundwater and/or oil extraction. The Project is not documented to be within an area of known subsidence hazards (USGS 2024b).

5.4.1.3.4 Tsunamis and Seiches

Tsunamis are seismically induced ocean waves with very long periods. Tsunamis may be manifested in the form of wave bores or a gradual upwelling of sea level and can be caused by offshore landslides or earthquakes. Seiches are the shaking of water in a large, enclosed body of water such as a lake. The Project is not located in a coastal area and would not be subject to tsunami runup.

5.4.1.4 Geologic Resources of Recreational, Commercial, or Scientific Value

At the Project site, the geologic units at the surface and in the subsurface are Panoche deposits that occur throughout the San Joaquin Valley; these units are not unique in terms of commercial value. The potential for recreational or scientific deposits (for example, rare mineral or fossil) is very low, given the geologic environment in the area.

No known commercial petroleum deposits are in the vicinity of the Project. There are a few oil and gas wells located within the vicinity of the Project. According to online maps of the Department of Conservation (DOC) (2024a), there are several plugged dry hole wells within 2 miles of the Project.

The Project is not located in an area of known mineral reserves. In addition, the Division of Mine Reclamation's list of mines, referred to as the AB 3098 List and regulated under SMARA, does not include any mines within the vicinity of the Project (DOC 2019).

5.4.2 Environmental Analysis

The potential effects from construction and operation of Project on geologic resources and risks to life and property from geological hazards are presented in the following subsections.

5.4.2.1 Significance Criteria

According to Appendix G of the California Environmental Quality Act statutes, a project may have a significant environmental impact in terms of geological hazards and resources if it would do the following:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the following:
  - Rupture of a known earthquake fault (Alquist-Priolo [AP] EFZ)
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides
- Be located on a geologic unit or soil that is unstable or that would become unstable because of the Project, and potentially result in onsite or offsite landslide, subsidence, or liquefaction.
- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local plan, specific plan, or other land use plan.

5.4.2.2 Impact Evaluation

Will the Project expose people or structures to potential adverse effects, including the risk of loss, injury, or death, involving:

a. Rupture of a known earthquake fault (Alquist-Priolo [AP] EFZ)?

No Impact. Section 5.4.1.3 states the Project is not located in an AP EFZ. The closest known Holocene-active zone is located approximately 6 miles southwest of the site, along the Greenville Fault. Construction and operation of the Project would not increase the potential occurrence for earthquakes or fault movement. The proposed Project would not directly or indirectly cause potential substantial adverse effects, including rupture of a known earthquake fault. Therefore, no impact would occur.

b. Strong seismic ground shaking?

Less than Significant. As stated earlier, the Greenville Fault is the closest known major Holocene-active fault. The Calaveras and Hayward Faults are also major active faults in Alameda County; however, they are located south and west of the Project. The Midway Fault is closest potentially active fault, located approximately 2 miles south of the Project. An earthquake on these, and other regional faults (such as the San Andreas Fault), would result in an anticipated moderate-to-strong ground shaking. The proposed Project would be constructed in accordance with the recommendations of the Project's geotechnical report and memorandum (Appendixes 5.4A and 5.4B), Alameda County Building Code, Alameda County Grading Ordinance, current seismic design specifications, current California Building Code (CBC) standards, and other regulatory requirements that reduce the potential for risks related to seismic events.

Therefore, the proposed Project would not directly or indirectly cause potential substantial adverse effects, including strong seismic ground shaking. Impacts would be less than significant.

c. Seismic-related ground failure?

Less than Significant. Due to shallow bedrock conditions at the Project, the risk of liquefaction is low, but other seismic-related ground failure could occur during Project operations. Seismically induced ground shaking could exacerbate soil settlement, including differential settlement, which is variable amounts of settlement over a given distance. Differential settlement can result in cracking and distress of foundations, utilities, and other infrastructure. However, the proposed Project would be constructed in accordance with the recommendations of the Project-specific geotechnical report and memorandum (Appendix 5.4A), Alameda County Building Code, Alameda County Grading Ordinance, current seismic design specifications, current CBC standards, and other regulatory requirements, which would reduce the potential for risks related to seismic events. Therefore, the proposed Project would not directly or indirectly cause potential substantial adverse effects, including seismic-related ground failure. Impacts would be less than significant.

d. Landslides

Less than Significant. Section 5.4.1.3.2 notes that, according to the Alameda County Local Hazard Mitigation Plan, the Project is located in an area of "few landslides" and low "deep-seated landslide susceptibility" (Alameda County 2021). As such, the potential for landslides is considered low. Project grading is anticipated to include approximately 52,794 cubic yards of cut and approximately 52,189 cubic yards of fill. Excavations would conform to applicable State and Federal industrial safety requirements. Where trench excavations are more than 5 feet deep, they would be sloped or shored. Trench walls would be sloped no steeper than 1½ H:1V in dry granular soils, and no steeper than 1H:1V in dry cohesive soils. Seepage or groundwater is not expected; however, flatter trench slopes may be required if seepage is encountered during construction or if exposed soil conditions differ from those encountered by the test pits and borings. Materials quality, placement procedures, and compaction operations for utility pipe bedding and shading materials would meet applicable agency requirements. Utility trench backfill above the shading materials may consist of native soils processed to remove rubble, rock fragments over 4 inches in largest dimension, rubbish, vegetation and other undesirable substances. Excavations would be completed in accordance with the California Division of Occupational Safety and Health (Cal/OSHA), which has responsibility for implementing federal rules relevant to worker safety, including slope protection during construction excavations (see Section 5.4.5). Cal/OSHA's requirements are more restrictive and protective than federal Occupational Safety and Health Administration (OSHA) standards. Title 8 of the California Code of Regulations (CCR), Chapter 4, Division of Industrial Safety, covers requirements for excavation and trenching operations, as well as safety standards whenever employment exists in connection with removal or wrecking of any fixed structure or its part. Compliance with Cal/OSHA regulations would prevent cave ins of temporary trench walls and failure of temporary steep slopes during grading and construction activities. Overall, with implementation of Project-specific geotechnical recommendations pertaining to slope stability, as well as compliance with Cal/OSHA regulations, the proposed Project would not directly or indirectly cause potential substantial adverse effects involving landslides. Impacts would be less than significant.

Will the Project be located on a geologic unit or soil that is unstable or that would become unstable because of the Project, and potentially result in onsite or offsite landslide, subsidence, or liquefaction?

Less than Significant. The Project is not located in an area susceptible to liquefaction or subsidence. Project grading would result in temporary steep slopes and vertical trench excavations. The Project would not result in onsite or offsite landslide, subsidence, or liquefaction through implementation of the Project-specific geotechnical recommendations pertaining to slope stability and soil settlement, as well as compliance with Cal/OSHA regulations. Therefore, impacts would be less than significant.

Will the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The Project is not located within a designated MRZ, and no mines or gravel pits are located in the Project vicinity. As a result, the Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts would occur.

Will the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local plan, specific plan, or other land use plan?

No Impact. The Project is not located within a designated MRZ, and no mines or gravel pits are located in the Project vicinity. As a result, the Project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local plan, specific plan, or other land use plan. No impacts would occur.

5.4.3 Cumulative Effects

A proposed project may have a cumulative impact when the incremental effect of the project is considerable when viewed in connection with other past, present, and reasonably foreseeable future projects (Public Resources Code [PRC] Section 21083; CCR, Title 14, Sections 15064[h], 15065[c], 15130, and 15355). These projects are identified in Section 2.5 of the Project Description and shown on Figure 2-6.

None of the projects identified within the geographic scope of potential cumulative impacts would intersect or be additive to the Project's site-specific geologic hazards resource impacts; therefore, no cumulative effects are identified for geologic hazards and resources. In general, geologic hazards and resource impacts are site-specific and limited to the boundaries of each individual project rather than cumulative in nature.

5.4.4 Mitigation Measures

Typical mitigation measures will be incorporated into the Project and may include a subsidence monitoring plan that will comply with standards set forth in the Alameda County General Plan, and the assignment of a geotechnical engineer or engineering geologist onsite during construction. With the implementation of these measures, the Project will not result in significant direct, indirect, or cumulative geology-related impacts.

5.4.5 Laws, Ordinances, Regulations, and Standards

The LORS that may apply to geologic resources and hazards are summarized in Table 5.4-1. The local LORS discussed in this section are certain ordinances, plans, or policies of Alameda County. There are no federal LORS that apply to geological hazards and resources.

Table 5.4-1. LORS for Geological Hazards and Resources

LORS	Requirements/ Applicability	Project Conformity	Opt-In Application Reference
International			
International Building Code	Requires state to comply with during design and construction of engineered facilities	Project design and construction would comply with the International Building Code regarding geologic hazards through compliance with the CBC and the recommendations of a Projects-specific geotechnical report.	Section 5.4.5.2
State			
CBC, 2022	Defines acceptable design criteria for structures with respect to seismic design and load-bearing capacity	Project design and construction would comply with the CBC regarding geologic hazards through compliance with the recommendations of a Project-specific geotechnical report.	Section 5.4.5.3.1
Cal/OSHA, CCR Title 8	Outlines specific measures to be used for temporary excavation and trench work where workers could be exposed to unstable soil conditions	Project construction would comply with Cal/OSHA with respect to temporary slopes and excavations.	Section 5.4.5.3.2
PRC 25523(a): 20 CCR § 1252 (b) and (c)	Adopted to prevent the construction of buildings used for human occupancy on the surface traces of active faults	None of the Project components cross an AP EFZ. Thus, the Project will not be subject to requirements for construction within an EFZ.	Section 5.4.5.3.3
SMARA, PRC, Division 2, Chapter 9, Section 2710 et seq.	Outlines comprehensive surface mining and reclamation policy for the regulation of surface mining operations	The Project is not located in an area of known mineral reserves. In addition, the Division of Mine Reclamation's list of mines, referred to as the AB 3098 List and regulated under the SMARA, does not include any mines within the vicinity of the Project.	Section 5.4.5.3.4

LORS	Requirements/ Applicability	Project Conformity	Opt-In Application Reference
Title 14, CCR, Division 2, Chapter 8, Subchapter 1, State Mining and Geology Board Reclamation Regulations, Section 3500 et seq.	Outlines policy for the reclamation of mined lands and the conservation of mineral resources	The Project is not located in an area of known mineral reserves. In addition, the Division of Mine Reclamation's list of mines, referred to as the AB 3098 List and regulated under the SMARA, does not include any mines within the vicinity of the Project.	Section 5.4.5.3.5
Local			
Alameda County Code of Ordinances, Chapter 15.08- Building Code	Adopts the 2022 CBC, with latest amendments	Project design and construction would comply with the Alameda County Building Code regarding geologic hazards through compliance with the recommendations of a Project-specific geotechnical report.	Section 5.4.5.4
Alameda County Code of Ordinances, Chapter 15.36- Grading Erosion and Sediment Control	Standards for grading and erosion control, including permit requirements	Project construction would comply with Alameda County erosion and sediment control ordinances regarding erosion control during grading and construction through compliance with the CBC and the recommendations of a Project-specific geotechnical report.	Section 5.4.5.4
Alameda County General Plan, Safety Element: Goal 1 - Seismicity	Goals and policies to protect against geologic hazards	Project design and construction would comply with Alameda County Safety Element goals regarding seismicity through compliance with the CBC and the recommendations of a Project-specific geotechnical report.	Section 5.4.5.5
East County Area Plan, Environmental Health and Safety Element - Soil and Slope Stability	Includes policies and programs that are intended to minimize risks to lives and property due to soil and slope instability	Project design and construction would comply with the East County Area Plan regarding soil and slope stability through compliance with the CBC and the recommendations of a Project-specific geotechnical report.	Section 5.4.5.7
East County Area Plan, Environmental Health and Safety Element - Seismic and Geologic Hazards	Includes policies and programs that are intended to minimize risks to lives and property due to seismic and geologic hazards	Project design and construction would comply with the East County Area Plan with regard to seismicity and geologic hazards through compliance with the CBC and the recommendations of a Project-specific geotechnical report.	Section 5.4.5.7

5.4.5.1 Federal LORS

No federal regulations apply to mineral resources in the Project area.

5.4.5.2 International Building Code

Engineered facilities designed and constructed in California must comply with the requirements of the International Building Code and the adoption of that code by the State of California (refer to CBC in the State LORS subsection).

5.4.5.3 State Laws, Ordinances, Regulations, and Standards

5.4.5.3.1 California Building Code

The Project is subject to the applicable sections of Title 24, Part 2 of the 2022 CBC, which is administered by the California Building Standards Commission. Under state law, all building standards must be centralized in Title 24 to be enforceable. The CBC contains necessary California amendments, which are based on American Society of Civil Engineers (ASCE)/Structural Engineering Institute Standards. These standards provide requirements for general structural design and include means for determining earthquake loads, as well as other loads for inclusion into building codes. The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a seismic design category for a project. Once a project is categorized according to a seismic design category, design specifications can be determined. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure—or any appurtenances connected or attached to such buildings or structures—throughout California.

Building requirements specific to BESS enclosures are included in Chapter 17A of the 2022 CBC. Division of State Architects Interpretation of Regulations (IR) N-4 specifies code requirements relating to BESS enclosures that consist of prefabricated modular structures not on or inside a building for structural safety and fire life safety reviews.

IR N-4 clarifies the design or alternative shake table testing requirements of premanufactured enclosures and the internal components for seismic loading. The design of BESS enclosures connections shall comply with the applicable sections of the CBC, American Institute of Steel Construction Specification for Structural Steel Buildings (AISC 360), American Institute of Steel Construction Seismic Provisions for Structural Steel Buildings (AISC 341), and ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures (Division of State Architect 2023).

The BESS enclosures envisioned for this Project are not “walk-in” type enclosures because the battery racks are accessible from outside the enclosure for maintenance purposes, and there is no ability to enter the enclosures. Based on this arrangement, each individual enclosure is considered electrical equipment (Battery Cabinet or Enclosure) and does not constitute a building. Therefore, construction type, fire resistance rated construction, and means of egress requirements for buildings do not apply to the enclosures. In addition to the other LORS listed elsewhere in this section, the Project and systems will be designed according to the applicable 2021 California Fire Code (CFC), 2023 National Electric Code (NEC), and 2023 National Fire Protection Association (NFPA) codes and standards such as NFPA 72 and NFPA 855. As required by NFPA855, given the size and type of the BESS, the system will be tested per UL9540A testing standard (at the cell, module, and unit levels), and listed to the UL9540 listing.

5.4.5.3.2 California Division of Occupational Safety and Health

Grading and construction activities are subject to occupational safety standards for excavation and trenching, as specified in Cal/OSHA regulations (Title 8 of the CCR). These regulations specify the measures to be used for excavation and trench work where workers could be exposed to unstable soil conditions. The proposed Project would be required to employ these safety measures during excavation and trenching.

5.4.5.3.3 California PRC 25523(a): 20 CCR § 1252 (b) and (c)

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) was passed in 1972 to prevent the construction of buildings used for human occupancy on the surface traces of active faults. None of the Project components cross an AP EFZ. Thus, the Project will not be subject to requirements for construction within an EFZ.

5.4.5.3.4 SMARA, PRC, Division 2, Chapter 9, Section 2710 et seq.

SMARA provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the State's mineral resources. PRC Section 2207 provides annual reporting requirements for all mines in the state, under which the State Mining and Geology Board is also granted authority and obligations.

The County enacts ordinances to implement SMARA at the local level and to act as lead agency for the issuance of permits, development of reclamation plans, and is the holder of reclamation financial assurances. SMARA will only be applicable to borrow pits.

5.4.5.3.5 Title 14, CCR, Division 2, Chapter 8, Subchapter 1, State Mining and Geology Board Reclamation Regulations, Section 3500 et seq.

SMARA Chapter 9, Division 2 of the PRC, requires the State Mining and Geology Board to adopt state policy for the reclamation of mined lands and the conservation of mineral resources. These policies are prepared in accordance with the Administrative Procedures Act (Government Code) and are found in CCR, Title 14, Division 2, Chapter 8, Subchapter 1.

The administering agency for this authority is the Alameda County Public Works Agency.

5.4.5.4 Alameda County Code of Ordinances

The Alameda County Code of Ordinances, Chapter 15.08-Building Code, adopts the 2022 CBC, with amendments and added sections. The purpose of a building code is to provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within the County. Building Code provisions apply to the construction, alteration, moving, demolition, repair, and use of any building or structure within the County. With establishment of the Building Code of Alameda County, the County exercised its authority to establish more restrictive and reasonably necessary differences to the provisions of the 2022 CBC, including modifications to Health and Safety Code Section 18941.5 for Building Standards Law. The Alameda County Code of Ordinances, Chapter 15.36-Grading Erosion and Sediment Control, establishes standards for grading and erosion control, including permit requirements, for work on private property within the unincorporated area of Alameda County. Chapter 17.54.570-Grading requires the Applicant to assure stable ground forms, erosion control, and adequate surface drainage.

5.4.5.5 Alameda General Plan, Safety Element

The Alameda County General Plan includes policies and programs that are intended to address geology and soils and guide future development in a way that lessens impacts. For instance, the Safety Element (Alameda County 2022) addresses issues related to protecting the community from any unreasonable risks associated with seismically induced surface rupture, ground shaking, ground failure, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction, and other seismic hazards identified on seismic hazard maps; other known geologic hazards; flooding; and wildland and urban fires. Applicable goals and policies from the City's General Plan are summarized below:

Safety Goal. To minimize risks to lives and property due to seismic and geologic hazards.

Policies:

> *Policy P1. To the extent possible, projects should be designed to accommodate seismic shaking and should be sited away from areas subject to hazards induced by seismic shaking (land sliding, liquefaction, lurking, etc.) where design measures to mitigate the hazards will be uneconomic or will not achieve a satisfactory degree of risk reduction.*
>
> *Policy P2. Structures should be located at an adequate distance away from active fault traces, such that surface faulting is not an unreasonable hazard.*
>
> *Policy P3. Aspects of all development in hillside areas, including grading, vegetation removal and drainage, should be carefully controlled in order to minimize erosion, disruption to natural slope stability, and landslide hazards.*
>
> *Policy P7. The County, prior to approving new development, shall evaluate the degree to which the development could result in loss of lives or property, both within the development and beyond its boundaries, in the event of a natural disaster.*
>
> *Policy P10. Buildings shall be designed and constructed to withstand ground shaking forces of a minor earthquake (1-4 magnitude) without damage, of a moderate (5 magnitude) earthquake without structural damage, and of a major earthquake (6-8 magnitude) without collapse of the structure.*
>
> *Policy P11. All construction in unincorporated areas shall conform to the Alameda County Building Ordinance, which specifies requirements for the structural design of foundations and other building elements within seismic hazard areas.*

Actions:

> *Action A1. Require all new construction to meet the most current, applicable, lateral force requirements.*
>
> *Action A3. Require sites to be developed in accordance with recommendations contained in the soil and geologic investigations reports.*
>
> *Action A17. Aspects of all development in hillside areas, including grading, vegetation removal and drainage, should be carefully controlled in order to minimize erosion, disruption to natural slope stability, and landslide hazards. The County's development standards and guidelines, permit application review process, Section 15.08.240 of its Building Ordinance, the Grading Erosion and Sediment Control Ordinance (Chapter 15.36 of the Alameda County General Ordinance Code), the Stormwater Management and Discharge Control Ordinance (Chapter 13.08), and Subdivision Ordinance (Title 16) shall serve to implement this policy.*

5.4.5.6 Alameda General Plan, Land Use Element

The East County Area Plan of the Alameda County General Plan (Alameda County 2000) includes policies and programs that are intended to address mineral resources in the East County area. Applicable goals and policies from the East County Plan are summarized below:

Hazard Zones Goal. To minimize risks to lives and property due to seismic and geologic hazards.

> *Policy 134. The County shall not approve new development in areas with potential natural hazards (flooding, geologic, wildland fire, or other environmental hazards) unless the County can*

determine that feasible measures will be implemented to reduce the potential risk to acceptable levels, based on site-specific analysis.

Policy 135. The County, prior to approving new development, shall evaluate the degree to which the development could result in loss of lives or property, both within the development and beyond its boundaries, in the event of a natural disaster.

5.4.5.7 East County Area Plan, Environmental Health and Safety Element

The East County Area Plan of the Alameda County General Plan (Alameda County 2000) includes policies and programs that are intended to address environmental hazards in the East County area. Applicable goals and policies from the East County Plan are summarized below:

Seismic and Geologic Hazards Goal. To minimize the risks to lives and property due to seismic and geologic hazards.

Policy 309. The County shall not approve new development in areas with potential for seismic and geologic hazards unless the County can determine that feasible measures will be implemented to reduce the potential risk to acceptable levels, based on site-specific analysis. The County shall review new development proposals in terms of the risk caused by seismic and geologic activity.

Policy 310. The County, prior to approving new development, shall evaluate the degree to which the development could result in loss of lives or property, both within the development and beyond its boundaries, in the event of a natural disaster.

Policy 313. The County shall require development in hilly areas to minimize potential erosion and disruption of natural slope stability which could result from grading, vegetation removal, irrigation, and drainage.

Policy 315. The County shall require that buildings be designed and constructed to withstand ground-shaking forces of a minor earthquake without damage, of a moderate earthquake without structural damage, and of a major earthquake without collapse of the structure.

5.4.6 Agencies and Agency Contacts

Compliance with CBC standards is covered under engineering and construction permits for the Project. There are no other permit requirements that specifically address geologic resources and hazards.

Table 5.4-2. Agency Contacts for Geologic Hazards and Resources

Issue	Agency	Applicability
Alameda County Public Works Agency	Alameda County Public Works Agency 399 Elmhurst Street, Room 141 Hayward, CA 94544 (510) 567-5868 info@acpwa.org	Building and grading permits
National Pollutant Discharge Elimination System Construction General Permit	Alameda County Public Works Agency 399 Elmhurst Street, Room 141 Hayward, CA 94544 (510) 567-5868 info@acpwa.org	Grading and erosion control

5.4.7 Permits and Permit Schedule

No permits are required for compliance with geological LORS.

5.4.8 References

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5.5 Hazardous Materials Handling

This section discusses the potential effects on human health and the environment from the use and storage of hazardous materials in conjunction with the Viracocha Hill Battery Energy Storage System (Viracocha Hill BESS or Project). Section 5.5.1 describes the existing environment that may be affected. Section 5.5.2 identifies potential impacts on the environment and on human health from site development. Section 5.5.3 addresses potential cumulative effects. Section 5.5.4 presents proposed mitigation measures. Section 5.5.5 presents the laws, ordinances, regulations, and standards (LORS) applicable to hazardous materials and the Project. Section 5.5.6 describes the agencies involved and provides agency contacts. Section 5.5.7 describes permits required and the permit schedule. Section 5.5.8 provides the references used to develop this section. Hazardous waste management, including management of potentially contaminated soil and groundwater, is addressed in Section 5.14, Waste Management.

5.5.1 Affected Environment

This discusses the affected environment.

5.5.1.1 Land Use

The Project site is located in the unincorporated area of Alameda County, California. The site is currently minimally developed. The regional land use is for wind turbine power generation and has been since at least 1992 based on aerial imagery (Google Earth Pro 2024). Bethany Reservoir is 0.8 mile north of the Project area, and the city of Tracy is 3.3 miles east of the Project area. The Altamont Landfill and Resource Recovery Facility, operated by Waste Management, Inc., is approximately 1.7 miles southwest of the Project area. Land use in the immediate vicinity of the Project area (discussed in detail in Section 5.6, Land Use) consists primarily of wind turbine power generating facilities. The nearest permanent residence to the Project site is located approximately 1.3 miles to the northeast.

The project consists of an up to 90.7 Megawatt(MW), 362.8-MW-hour BESS located adjacent to the proposed Sand Hill Wind Repower Project (also owned and operated by Viracocha Wind). The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

Table 5.5-1 lists the sensitive receptors located within 6 miles of the Project site. These include 15 schools, 6 childcare facilities, and 4 places of worship. All sites are to the east/southeast of the Project site. Receptor locations are shown on Figure 5.5-1, Sensitive Receptors within 6 Miles of the Project.

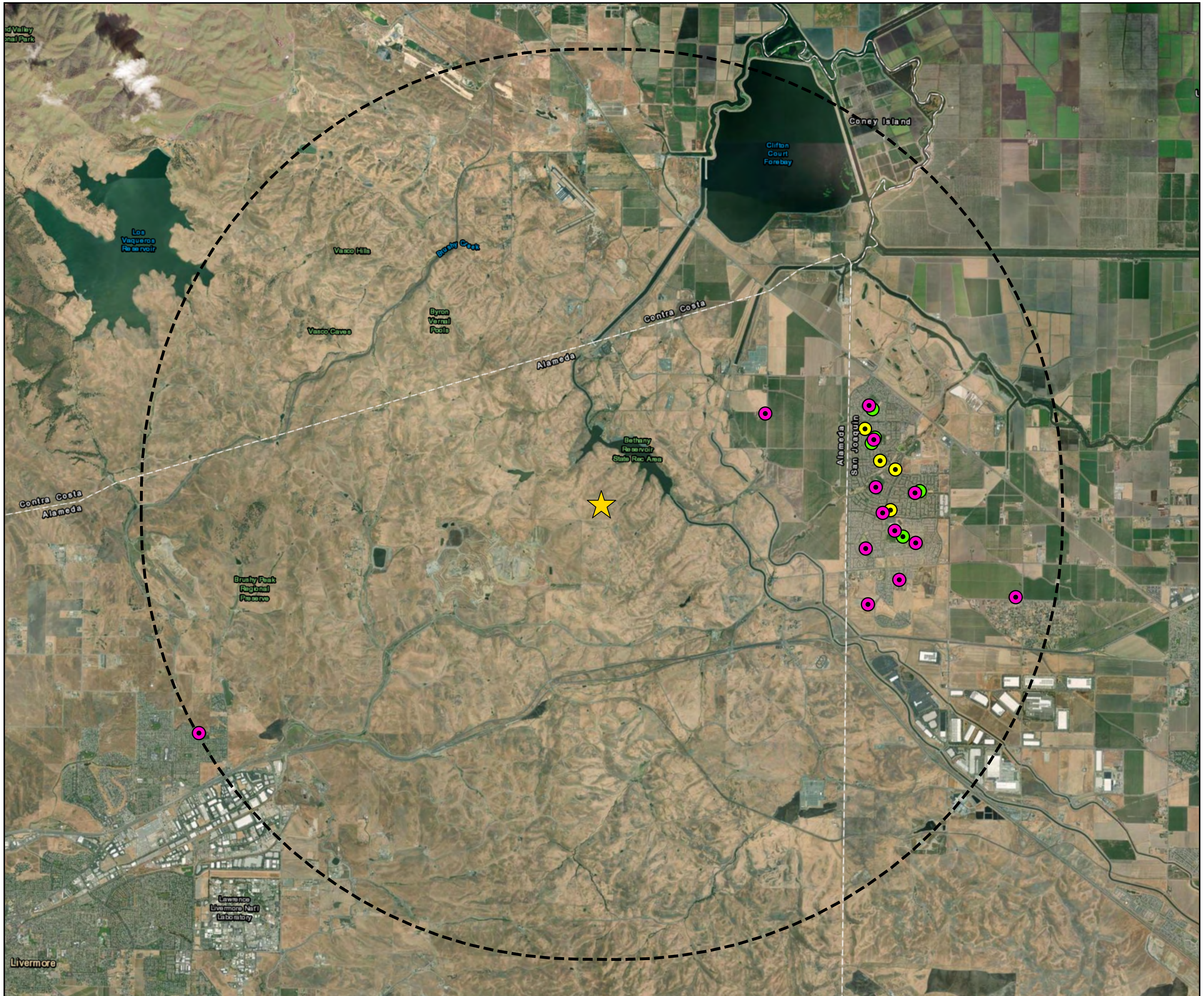
Table 5.5-1. Sensitive Receptors Located Within 6 Miles of the Project Site

Type	Name	Address	Distance From Project Site
Child Care Services	Catalyst Kids – Altamont	452 W. St. Francis Ave. Mountain House, CA 95391	Approximately 3.5 miles
Child Care Services	Montessori Before and After School Program – Altamont (SA)	452 W. St. Francis Ave. Mountain House, CA 95391	Approximately 3.5 miles
Child Care Services	Montessori Before and After School Program – Questa	685 North Montebello St. Mountain House, CA 95391	Approximately 3.6 miles

Type	Name	Address	Distance From Project Site
Child Care Services	Montessori School of Mountain House	685 North Montebello St. Mountain House, CA 95391	Approximately 3.7 miles
Child Care Services	Young Explorers	1178 S. Tradition St. Mountain House, CA 95391	Approximately 3.8 miles
Child Care Services	Catalyst Kids – Wicklund	300 East Legacy Mountain House, CA 95391	Approximately 4 miles
Places of Worship	Affirming Hope Ministries	409 N. Alta Dena St. Mountain House, CA 95391	Approximately 3.4 miles
Places of Worship	One Body One Spirit Church Inc.	375 W. Viento St. Mountain House, CA 95391	Approximately 3.5 miles
Places of Worship	AL-Mustafa Foundation Inc.	112 W. Luna Loca Ln. Mountain House, CA 95391	Approximately 3.7 miles
Places of Worship	Mountain House Muslim Association	795 Adam St. Mountain House, CA 95391	Approximately 3.7 miles
School	Mountain High House Elementary	3950 Mountain House Rd. Byron, CA 94514	Approximately 3 miles
School	Hansen Elementary	1400 S. Durant Terrace Mountain House, CA 95391	Approximately 3.3 miles
School	Peter Honsen Elementary School	1400 S. Durant Terrace Mountain House, CA 95391	Approximately 3.4 miles
School	Montessori School of Mountain House	685 N. Montebello St. Mountain House, CA 95391	Approximately 3.4 miles
School	Altamont Elementary	452 W. Saint Francis Ave. Mountain House, CA 95391	Approximately 3.5 miles
School	Bethany Elementary	570 Escuela Dr. Mountain House, CA 95391	Approximately 3.5 miles
School	Sebastian Questa Elementary	543 N. Montebello St. Mountain House, CA 95391	Approximately 3.5 miles
School	Bethany Elementary School	570 S. Escuela Dr. Mountain House, CA 95391	Approximately 3.5 miles
School	RedRose Montessori Preschool	805 S. Central Parkway Mountain House, CA 95391	Approximately 3.6 miles
School	Mountain House High	1090 S. Central Parkway Mountain House, CA 95391	Approximately 3.7 miles
School	Evelyn Costa Elementary	1675 South Gobind Blvd. Mountain House, CA 95391	Approximately 3.75 miles
School	Julius Cordes Elementary	296 East Parco Ave. Mountain House, CA 95391	Approximately 4 miles
School	Wicklund Elementary	300 E. Legacy Dr. Mountain House, CA 95391	Approximately 4 miles

Type	Name	Address	Distance From Project Site
School	Delta College, Mountain House Campus	2073 Central Pkwy Mountain House, CA 95391	Approximately 4.2 miles
School	Lammarsville Elementary	16555 W. Von Sosten Rd. Tracy, CA 95304	Approximately 5.5 miles
School	Altamont Creek Elementary School	6500 Garavanta Ranch Rd. Livermore, CA 94551	Approximately 6 miles
School	Delta Valley College	5151 Pacific Ave. Stockton, CA 95207	Approximately 4 miles

No hospitals or prisons are located within 6 miles of the Project site.



Legend

- Viracocha Hill BESS Project
- School
- Place of Worship
- Childcare/Daycare Facility
- 6-Mile Buffer

Source:
1) ESRI Aerial Images

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0 2 4
Miles

Figure 5.5-1
Sensitive Receptors within 6 Miles of Project
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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5.5.1.2 Project Hazardous Materials Use

The Project will use hazardous materials during construction, operation, and decommissioning (including demolition of the facility, removal of project-related materials, and site restoration). The Project will comply with applicable laws and regulations for the storage of these materials to minimize the potential for a release of hazardous materials. In addition, the Project will conduct emergency response planning to address public health concerns regarding hazardous materials storage and use. The following sections describe the Project's use of hazardous materials, followed by tables detailing the characteristics, quantities, and storage or use locations of the hazardous materials.

5.5.1.2.1 Construction Phase

The hazardous materials used for construction will be typical of most construction projects of this type. Materials will include small quantities of gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol (antifreeze), and welding materials and supplies. Petroleum such as Diesel No. 2 or gasoline may be stored onsite during construction and decommissioning to fuel equipment.

Hazardous materials used during construction present a relatively low public health risk, but could potentially contaminate surface soils, surface water and groundwater if a release of a hazardous material such as diesel fuel occurred. The planned use of best management practices (BMPs), such as secondary containment for equipment refueling, will reduce the likelihood of potential incidents involving hazardous materials.

5.5.1.2.2 Operations Phase

Limited amounts of hazardous materials will be stored or used on the site during operations, including mineral oil to be sealed within the transformers, sulfur hexafluoride in circuit breakers, paints, and battery components, including battery electrolyte solutions and lithium-ion batteries. The Tesla Megapacks (or similar) also include coolant and refrigerant in each unit. A list of hazardous materials that will be stored and used onsite, including quantity and location, is provided in Table 5.5-2. Appropriate spill containment and cleanup kits will be maintained during the operation of the Project. Fuels and lubricants used in operations will be subject to a Spill Prevention Control and Countermeasures Plan (SPCC Plan) to be prepared for the Project. In addition, a Hazardous Materials Business Plan (HMBP) will be prepared and filed with the Alameda County Department of Environmental Health, the local Certified Unified Program Agency (CUPA) for this project. The Project will store sufficient diesel to supply local backup power for fire pumps required to meet fire department and insurance requirements. Should this exceed 1,320 gallons total onsite, or 660 gallons per container, an SPCC Plan will be prepared in accordance with federal and California regulations, which will be included in the HMBP. Solid and universal waste generated during operations will be handled in accordance with a solid waste management plan (see Section 5.14).

Lithium-ion batteries commonly contain the heavy metals cobalt, copper, and nickel, as well as other trace heavy metals depending on the source of the mined components. The exact components will not be fully known until the batteries are sourced closer to construction. The battery modules that are anticipated to be used at the Project site are safe under normal handling and operating conditions. Each individual module will be monitored and controlled via built-in safety monitoring systems provided by the manufacturer to ensure safe and efficient operations, and every BESS enclosure will be equipped with ventilation, as well as gas, heat, and smoke detection and alarms. The systems will be designed, constructed, and operated pursuant to the California Fire Code.

Hazardous material chemical constituents and reportable quantities are described in Table 5.5-3.

5.5.2 Environmental Analysis

Construction and operation of the Project will involve the use of various hazardous materials. The use of these materials and their potential to cause adverse environmental and human health effects are discussed in this section.

5.5.2.1 Significance Criteria

A project may have a significant effect on the environment in terms of hazardous materials handling if it would do the following (California Environmental Quality Act [CEQA] Guidelines Section 15002[g], Appendix G):

- Create a significant hazard to the public or the environment through the routine transport or use of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (also known as the Cortese List) and, as a result, create a significant hazard to the public or environment (refer to Section 5.14, Waste Management, for a discussion of hazardous waste sites).
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Table 5.5-2. Use and Location of Hazardous Materials

Chemical	Use	Maximum Quantity Onsite	Annual Quantity	Storage Location (General Arrangement Location Code)	State	Type of Storage
Battery electrolyte/ sulfuric acid	Construction and personnel vehicle operations	92 gallons	920 gallons	Present in maintenance vehicles visiting the site	Liquid	Continuously onsite
Hydraulic fluid	Lubricant on construction and demolition equipment	100 gallons		Present in construction and maintenance vehicles visiting site	Liquid	Continuously onsite
Cleaning chemicals/ detergents (various)	Site maintenance	250 gallons	2,500 gallons	Chemical storage containers in onsite storage, in a safety cabinet when not in use	Liquid	Continuously onsite
Insulating oil	Generator Setup Transformers	12,000 gallons	12,000 gallons	Contained within transformers	Liquid	Continuously onsite
Insulating oil	BESS Power Conversion System Transformer	143,300 pounds	143,300 pounds	Contained within transformers	Liquid	Continuously onsite
Insulating oil	Bulk Electric System Auxiliary Transformer	2,000 gallons	2,000 gallons	Contained within transformers	Liquid	Continuously onsite
Diesel No. 2	Fuel for firewater pump engine	800 gallons	8,000 gallons	Double-walled tank in appropriate location	Liquid	Continuously onsite
Sulfur hexafluoride	Circuit breakers	250 pounds	2,500 gallons	Contained within breaker and one 50-pound refill cylinder stored in the substation	Gas	Continuously onsite
Lithium-ion batteries	Energy storage	2,592 modules	NA	BESS Modules	Solid	Continuously onsite
Refrigerant	BESS Containers	360 pounds	NA	BESS Containers/Megapacks	Liquid	Continuously onsite
1,1,1,2-Tetrafluoroethane (R134a)	Refrigerant	6.6 pounds per unit, 475.2 pounds total	NA	BESS Containers/Megapacks	Liquid	Continuously onsite
Paint (various)	Touchup of painted surfaces	Varies (less than 25 gallons of liquids or 100 pounds of solids for each type)	250 pounds	Chemical storage containers in onsite storage	Liquid	Continuously onsite

Note:
NA = Not applicable

Table 5.5-3. Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	Annual Quantity	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Battery electrolyte	Sulfuric acid	7664-93-9	92 gallons	92 gallons	1,000 pounds	2,632 pounds	1,000 pounds	NA	Yes
Diesel No. 2	Diesel No. 2	68576-34-6	250 gallons	750 gallons	NA	NA	NA	NA	No
Hydraulic fluid	Lubricant on construction and demolition equipment	64742-54-7	100 gallons		42 gallons[e]	42 gallons[e]	NA	NA	No
Insulating oil, cumulative	Oil	8012-95-1	12,000 gallons	12,000 gallons	42 gallons[e]	42 gallons[e]	NA	NA	No
Insulating oil	Oil	8012-95-1	143,300 pounds	65,000 kg	42 gallons[e]	42 gallons[e]	NA	NA	
Insulating oil	Oil	8012-95-1	2,000 gallons	2,000 gallons	42 gallons[e]	42 gallons[e]	NA	NA	No
Propylene glycol	Propylene glycol	57-55-6	500 gallons	500 gallons	NA	NA	NA	NA	No
Sulfur hexafluoride	Sulfur hexafluoride	2551-62-4	250 pounds	250 pound	NA	NA	NA	NA	No
R-134a	1,1,1,2-Tetrafluoroethane	811-97-2	475.2 pounds	NA	NA	NA	NA	NA	NA
Lithium-ion batteries	Lithium-ion	47-86-2	2,592 modules	NA	NA	NA	NA	NA	No
Paint	Various	Various	Varies (less than 25 gallons of liquids or 100 pounds of solids for each type)	250 gallons	NA	NA	NA	NA	No

Notes:

[a] RQ for a pure chemical, per the CERCLA SARA (Ref. 40 CFR Section 302, Table 302.4). Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.

[b] RQ for materials as used onsite. Because some of the hazardous materials are mixtures that contain only a percentage of an RQ, the RQ of the mixture can be different than for a pure chemical. For example, if a material only contains 10 percent of a reportable chemical and the RQ is 100 pounds, the RQ for that material would be (100 pounds)/(10 percent) = 1,000 pounds.

[c] EHS TPQ (Ref. 40 CFR Part 355, Appendix A). If quantities of extremely hazardous materials equal to or greater than the TPQ are handled or stored, they must be registered with the local Administering Agency.

[d] TQ is from 19 CCR 2770.5 (state)

[e] State RQ for oil spills that will reach California state waters [Ref. CA Water Code Section 13272(f)]

CAS = Chemical Abstracts Service
CCR = California Code of Regulations
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
NA = Not applicable. No reporting requirement. Chemical has no listed threshold under this requirement.
RQ = reportable quantity
SARA = Superfund Amendments and Reauthorization Act
TPQ = threshold planning quantity
TQ = threshold quantity

5.5.2.2 Transportation of Hazardous Materials

Project operations will not require regular transportation of hazardous materials to the Project site. When necessary deliveries are made, transportation of hazardous materials will comply with all U.S Department of Transportation (DOT), California Department of Transportation (Caltrans), U.S. Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC), California Highway Patrol (CHP), and California State Fire Marshal regulations. Compliance with applicable LORS will ensure that impacts from the transportation of hazardous materials will be less than significant. Truck access to the site for delivery of materials is described later in this section. Refer to Section 5.12, Traffic and Transportation, for additional details on the proposed transportation routes.

5.5.2.3 Hazardous Materials Use

5.5.2.3.1 Impact Evaluation Criteria

The potential for impacts related to hazardous materials handling were evaluated using the relevant criteria described in the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines). Specific to hazardous materials handling, the CEQA Checklist asks, would the project:

- Create a significant hazard to the public or environment through routine transport or use of hazardous materials;
- Create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Create emissions to handle materials, substances, or waste within 0.25 mile of an existing or proposed school;
- Be included on a list of hazardous materials sites compiled pursuant to Cortese List outlined in Government Code Section 65962.5 and result in a significant hazard to the public or environment;
- Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency plan?

5.5.2.3.2 Construction and Decommissioning Phase

Less Than Significant: Construction and decommissioning will involve the transport of limited quantities of hazardous materials to the Project site and may pose minor hazards associated with their use. Small fuel spills may occur during onsite refueling. The worst-case scenario for a chemical release from fueling operations would be a vehicle accident involving a service or refueling truck. Equipment refueling will be performed away from all aquatic resources to prevent contamination of water in the event of a fuel spill. As described in Section 5.5.4.1, best management practices (BMPs) will be employed to prevent spills and leaks from reaching the environment. If a fuel spill does occur on soil, the contaminated soil will be placed into barrels or trucks for appropriate offsite disposal.

Tesla Megapacks (or similar) contain recyclable material, and Tesla recommends that Megapacks (or similar) be returned to the manufacturing facility for recycling and disposal. The units must be discharged before shipment. In addition, disposal, recycling, and transportation must comply with local, state, and federal laws for all portions of the haul routes.

The quantities of hazardous materials that will be handled during construction are relatively small. The BMPs described in Section 5.5.4.1 will be implemented by contractor personnel; therefore, the potential for environmental effects will be less than significant.

5.5.2.3.3 Project Operation

Less Than Significant: Limited amounts of hazardous materials will be stored or used on the site during operations, including mineral oil to be sealed within the transformers, sulfur hexafluoride to be sealed in circuit breakers, fuels, paints, and battery components. Appropriate spill containment and cleanup kits will be maintained during operation of the Project. Fuels and lubricants used in operations will be subject to a SPCC Plan to be prepared for the Project, if required. Federal and California regulations require a SPCC Plan if stored quantities are equal to or greater than 660 gallons for a single container, or equal to or greater than 1,320 gallons total. The Project would store sufficient diesel to supply local backup power for fire pumps required to meet fire department and insurance requirements. Should this exceed 1,320 gallons total on site, an SPCC Plan will be prepared and be included in the HMBP.

Lithium-ion batteries commonly contain the heavy metals cobalt, copper, and nickel, as well as other trace heavy metals depending on the location of the source of the mined components. In addition, coolant (ethylene glycol and water) and refrigerant (1,1,1,2-Tetrafluoroethane) will be pre-packaged in the Tesla Megapack 2XL System (or similar) to be utilized for the Project. The battery modules that are proposed to be used at the Project site are safe under normal handling and operating conditions. Each individual module will be monitored and controlled via built-in safety monitoring systems to ensure safe and efficient operations, and every BESS enclosure will be equipped with ventilation, as well as gas and heat detection and alarms. The systems will be constructed and operated pursuant to the California Fire Code.

5.5.2.4 Accidental Release Hazards

Less Than Significant: During construction and operation, if a chemical release were to occur without proper engineering controls in place, there is a low probability the public could be exposed to harmful vapors. In addition, during operations, uncontrolled release of liquid chemicals could run off and drain into nearby surface water. However, the California Fire Code, Articles 79 and 80, includes specific requirements for the safe storage and handling of hazardous materials that would reduce the potential for a release of hazardous materials and mixing of incompatible materials. Alameda County also has issued specific guidance on automatic fire sprinkler systems and fire alarm and detection systems (Chapter 60.04 of Title 6 [Alameda County 2024]). The Project design will incorporate storage and handling facilities in compliance with the California Fire Code and other applicable federal, state, and local LORS. With the implementation of these measures, the potential for the accidental release of hazardous materials will be minimized.

Tesla Megapacks (or similar) are assumed to be built with internal gutter systems to manage coolant spills, and to allow venting if the refrigerant (which is a gas when not under compression) is released. The Megapacks (or similar) have internal alarm systems to warn operators of such events. The gutter systems will be integrated into a site spill prevention system, such as berms or other secondary containment systems.

All transportation of hazardous substances would be conducted in accordance with DOT, Caltrans, and California Vehicle Code (CVC) requirements. Project operations would not involve the handling of any acutely hazardous materials 5that would have the potential to generate significant offsite consequences. A risk management plan (Health and Safety Code section 25531 et seq.) is not required because the Project is not a stationary source that has more than a threshold quantity of a regulated substance (as specified in Tables 1-3, CCR, Title 19 section 2770.5). However, release prevention measures are required under HMBP and SPCC rules and regulations, which would be implemented in the event hazardous materials or petroleum products are stored above reportable quantities. These measures, which include protections like secondary containment and accessible spill response kits, would reduce the potential for accidental releases.

5.5.2.4.1 Offsite Consequences Analysis

Less Than Significant: No regulated substances, as defined in California's Health and Safety Code, Section 25531 and Section 112(r) of the federal Clean Air Act (42 U.S.C. Section 7412(r)), will be used during the construction or operation phases of the Project. Anticipated releases will be limited to those typical of diesel engine operations. Therefore, an offsite consequences analysis is not necessary.

5.5.2.5 Fire and Explosion Hazards

Table 5.5-4 describes the hazard characteristics, such as flammability, for the hazardous materials that will be stored and used onsite. Article 80 of the California Fire Code requires all hazardous material storage areas to be equipped with a fire extinguishing system and requires ventilation for all enclosed hazardous material storage areas. Elements of the onsite fire suppression system during construction will consist of portable and fixed firefighting equipment in compliance with the Alameda County Municipal Code and manufacturer recommendations. Portable firefighting equipment will consist of fire extinguishers and small hose lines that conform to the California Division of Occupational Safety and Health (Cal/OSHA) and the National Fire Protection Association's (NFPA's) requirements. Fixed firefighting equipment to be used at the Viracocha Hill BESS during operations will be identified during the design of the Project.

Thermal runaway events occur when cells release more heat than can safely be dissipated, resulting in off-gassing, extremely high temperatures, fire, and possibly explosions. Tesla Megapacks (or similar) have built-in systems for controlling off-gassing and are designed to limit any thermal runaway events to individual Megapacks (or similar). Tesla Megapacks (or similar) comply with the requirements of UL 9540a or equivalent testing, which requires the facilities to include thermal management systems, fire detection systems, alarms, deflagration controls, and remote monitoring. Tesla (or similar) has made testing and firefighting information available for these units. Specifically, firefighting recommendations focus on protection of nearby structures, as the construction of the Megapacks (or similar) prevents fire fighters from accessing the burning batteries. Tesla (or similar) recommends that the burning unit be allowed to burn until it self-extinguishes. Water is recommended, as foams can present environmental hazards and are generally not necessary as the burning battery components are not accessible to fire-fighting personnel.

In addition, BESS units will be spaced to prevent fire from spreading from one unit to another in the unlikely event of a thermal runaway event, and to allow firefighters to protect nearby units in the case of fire.

5.5.2.5.1 Construction and Decommissioning

Less Than Significant: In the unlikely event of a fire or explosion, no sensitive receptors, including schools, hospitals, day-care facilities, emergency response facilities, or long-term health care facilities are within a 1-mile radius of the Project site. If a fire or explosion did occur due to handling of hazardous materials during construction activities, procedures from the Emergency Response Plan, SPCC Plan, Health and Safety Plan, and Fire Safety Plan would be implemented to reduce risks to worker safety. Additionally, construction would not involve the handling of acutely hazardous materials that would have the potential to generate significant offsite consequences, and as such, no protocol for modeling of hazardous materials releases is included, and no modeling is proposed. Therefore, construction of the Project facility and gen-tie line components would result in a less-than-significant impact involving fire and explosion hazards.

Table 5.5-4. Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials[a]	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability[b]
Battery electrolyte	Liquid, colorless, clear	Serious health hazard.	Reacts violently with metals, nitrate, chlorates, carbides, and other organic materials	Not flammable; reacts with most metals to yield explosive and flammable hydrogen gas
Diesel No. 2	Oily, light liquid	May be carcinogenic.	Oxidizers	Flammable
Insulating oil	Oily, clear liquid	Minor health hazard.	Oxidizers	Can be combustible, depending on manufacturer
Lubricating oil	Liquid, light straw, Clear	No significant health risks are expected from exposures under normal conditions of use.	May react with strong acids or strong oxidizing agents	Flammable
Propylene glycol	Gold, red, or green Liquid	May cause damage to organs through prolonged or repeated exposure.	Not reactive under normal conditions	Flammable
Sulfur hexafluoride	Colorless, odorless	May cause rapid suffocation. May cause dizziness, nausea, drowsiness, vomiting, excess salivation, loss of mobility/consciousness.	Not reactive under normal conditions	Not flammable
1,1,1,2-Tetrafluoroethane (R-134a)	Liquid in Megapacks	Asphyxiant, can cause frostbite if compressed liquid comes in contact with skin	Not reactive while sealed or under normal conditions	Not flammable
Lithium-ion batteries	Varies depending on manufacturer	Contents of an open battery can cause respiratory irritation, skin irritation, and severe eye irritation.	Not reactive while sealed	Lithium in the batteries is flammable
Paint	Various colored liquid	Refer to individual container labels.	Refer to individual container labels	Refer to individual container labels
Hydraulic fluid	Oily, dark liquid	Hazardous if ingested.	Oxidizers	Combustible

Note:

[a] Chemical vendor may be subject to change; however, chemical class will remain the same or similar.

[b] Under 49 CFR 173: "Flammable" fluids have a flash point less than or equal to 140 degrees Fahrenheit (60 degrees Celsius); "Combustible" fluids have a flash point greater than 140 degrees Fahrenheit (60 degrees Celsius) (DOT 2020).

Data were obtained from Safety Data Sheets. May be provided upon request.

5.5.2.5.2 Operations

Less than Significant. All hazardous material storage areas would be equipped with a fire extinguishing system and ventilation for enclosed substances per the requirement of Article 80 of the California Fire Code. Hazardous materials used and stored on-site during Project operation would be stored in appropriate containers in compliance federal and State regulations. During operation, procedures for the use and handling of hazardous materials would be described within the Project-specific HMBP as well as the Emergency Response Plan, SPCC Plan, Health and Safety Plan, and Fire Safety Plan.

Operation of the BESS facility would require the use of flammable and combustible materials such as lubrication oil and diesel fuel. Storage of flammable materials would be in accordance with Article 80 of the California Fire Code. A fire extinguishing system would be located near the storage area. Flammable materials would be handled in accordance with the HMBP and SPCC. With proper storage and handling, the risk of fire and explosion would be less than significant.

For emergency spills or fire related incidents 911 would first be called (Alameda County Fire Department 2025) and the closest Alameda County fire station is Alameda County Fire Department Station No. 20, located at 7000 East Avenue, L-388, Livermore, California, would be the first responder. If additional assistance is needed, the closest fire station (approximately 4 miles from the Project site, in San Joaquin County) is the Mountain House Fire Station No. 1, located at 911 Tradition Street, Mountain House, CA 95391. If a fire involves hazardous materials, the Alameda County Department of Environmental Health, Hazardous Materials Division can be contacted to direct fire stations equipped to handle hazardous materials. Both the HMBP and SPCC Plan require emergency response procedures to be documented and available at the operating site. Contact information for applicable emergency response agencies must be included in these plans and posted in conspicuous locations at the site.

The Applicant would use battery storage systems that are NFPA 855 Code compliant, UL certified, and include built-in failsafe and cooling systems designed to prevent thermal runaway and the spread of fire. A fire protection system would be installed to automatically shut down any affected battery storage components and prevent the spread of the fire to the other battery storage modules. In addition, a fire wall will be installed around the perimeter of the BESS area for fire protection purposes – both to prevent wildfire from affecting the site and to reduce the chance of an onsite fire from escaping the property. Fire suppression systems would be installed in accordance with the Alameda County Municipal Code (Title 6, Chapter 6.04). As such, impacts would be less than significant.

Section 5.5.16, Wildfire, discusses Project-related impacts related to wildfire.

5.5.3 Cumulative Effects

A cumulative effect refers to a proposed Project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed Project (Public Resources Code Section 21083; Title 14 CCR, Sections 15064[h], 15065[c], 15130, and 15355).

The proposed Project is within an area currently used for wind turbine electricity generation. Several industrial facilities, including an energy generating station (Mariposa Energy), battery compressor station, and a landfill (the Altamont Landfill and Resource Recovery facility) are near the Project area. The Bethany Reservoir State Recreation Area is approximately 0.8 miles northeast of the Project area.

The proposed Project and other related infrastructure projects may involve the storage, use, disposal, and transport of hazardous materials to varying degrees. Impacts from these activities are anticipated to be less than significant, because similar projects would also comply with federal, state, and local regulations and policies. For example, all the identified projects would be required to implement safety measures and precautions necessary to minimize any potential disturbance of hazardous materials and prevent the creation of additional hazards that cannot be mitigated or contained properly. Furthermore, other storage facilities would also be equipped with secondary containment and fire suppressant technology to reduce the impacts of potential battery fires. In light of all the evidence provided here, cumulative impacts related to hazards would be less than significant.

5.5.4 Mitigation Measures

The following sections present measures to mitigate potential public health and environmental effects of handling hazardous materials during construction and operation.

5.5.4.1 Construction Phase

5.5.4.1.1 Construction Fueling and Maintenance

General industry health, safety, and environmental BMPs will be implemented by construction personnel. The following BMPs are designed to reduce incidents involving hazardous materials:

- Equipment and vehicles requiring diesel refueling and maintenance will generally occur in designated areas that are designed to control potential spills. Designed areas will be bermed or covered by an impervious surface (asphalt or concrete) to control potential spills. Employees will be present during all refueling activities. When mobile diesel refueling is required, the diesel refueling vehicle will be equipped with fire extinguishers and spill containment. Spill containment (such as diapers) will be placed around the opening of the fuel tank to contain any potential minor spills. The facility and surface drainage systems are designed to manage stormwater runoff within the property bounds during construction in accordance with the Construction General Permit and SWPPP.
- Only authorized personnel will conduct vehicle and equipment service maintenance.
- Only EPA-approved pumps, hoses, and nozzles will be used to refuel equipment and vehicles.
- During services, catch-pans will be placed under equipment to catch potential spills or leaks.
- After servicing, disconnected hoses will be placed in containers to collect any residual fuel from the hoses.
- During diesel refueling, vehicle engines will be turned off.
- Smoking, open flames, or welding will not be permitted in diesel refueling and service areas or in hazardous waste storage areas.
- Diesel refueling will be performed away from surface water, natural drainages, or stormwater drains.
- Following diesel refueling activities, service trucks will immediately leave the construction zone.
- All service trucks used to refuel equipment and vehicles onsite will be provided with fire extinguishers and spill containment equipment, such as absorbents.
- All maintenance and diesel refueling areas will be inspected monthly. Results of inspections will be recorded in a logbook that will be maintained onsite.

In the unlikely event of a spill, the spill may need to be reported to the appropriate regulatory agencies, and cleanup of contaminated soil could be required. Small spills will be contained and cleaned up as soon as possible by trained, onsite personnel. Larger spills will be reported via emergency phone numbers to obtain help from offsite emergency response and cleanup crews. All personnel working on the Project during the construction phase will be trained in handling hazardous materials and the dangers associated with hazardous materials. An onsite health and safety person will be designated to implement health and safety guidelines and to contact emergency response personnel and the local hospital, if necessary.

If there is a large spill from a service or refueling truck, contaminated soil will be placed into barrels, lined roll-off containers, trucks, or other suitable containers by service personnel for offsite disposal at an appropriate facility in accordance with the law. If a spill involves hazardous materials quantities equal to or greater than the specific RQ (42 gallons for petroleum products), then all federal, state, and local reporting requirements will be followed. In the event of a fire or injury, the local fire department will be called.

In addition to the above mitigation measure, manufacturer recommendations will be followed when installing, operating, shutting down, decommissioning, and disposing of Megapacks (or similar).

5.5.4.2 Operation Phase

Hazardous materials storage will all occur onsite and will be in accordance with applicable codes and regulations specified in Section 5.5.2.3 In addition, the following mitigation measures will be implemented.

5.5.4.2.1 Petroleum Products

Federal and California regulations require an SPCC Plan if petroleum products above certain quantities are stored. Federal and state laws apply only to petroleum products that might be discharged to navigable waters. If stored quantities are equal to or greater than 1,320 gallons total (including aboveground storage tanks [ASTs], oil-filled equipment, and drums), or greater than 660 gallons in any single container, an SPCC Plan must be prepared. Because the facility will store more than 1,320 gallons of petroleum products, an SPCC Plan will be prepared.

5.5.4.2.2 Transportation/Delivery of Hazardous Materials and Regulated Substances

Hazardous materials will be delivered periodically to the facility. As discussed in Section 5.12, Traffic and Transportation, transportation of hazardous materials will comply with all Caltrans, DOT, EPA, DTSC, CHP, and California State Fire Marshal regulations. Under the CVC, CHP has the authority to adopt regulations for transporting hazardous materials in California.

5.5.4.2.3 Security Plan

In addition to standard industrial business security measures, the Project will prepare a security plan that will include the following elements:

- Descriptions of site fencing and security gate;
- Evacuation procedures for each phase of the Project (construction, operations, and decommissioning);
- A protocol for contacting law enforcement in the event of conduct endangering the facility, its employees, its contractors, or the public;
- A fire alarm monitoring system;
- Measures to conduct site personnel background checks, including employee and routine onsite contractors, consistent with state and federal law regarding security and privacy;
- A site access protocol for vendors; and
- A protocol for hazardous materials vendors to prepare and implement security plans as per 49 CFR 172.800 and to ensure that all hazardous materials drivers comply with personnel background security checks as per 49 CFR Part 172, Subpart I.

The plan also will include a demonstration that the perimeter security measures will be adequate. The demonstration may include one or more of the following:

- Security alarm for critical structures;
- Perimeter breach detectors and onsite motion detectors; and
- Video or still camera monitoring system to enable offsite monitoring.

5.5.4.3 Monitoring

In compliance with applicable federal, state, and local LORS, Project personnel will regularly inspect the facility to ensure that any deficiencies are promptly repaired. In addition, the Project will be subject to regular inspections by the Alameda County Department of Environmental Health, which will determine compliance with appropriate regulatory requirements for hazardous materials handling.

In addition, Telsa Megapacks (or similar) are each built with individual monitoring systems to warn of elevated temperatures, coolant spills, or refrigerant releases. These will be integrated into Project monitoring plans.

5.5.5 Laws, Ordinances, Regulations, and Standards

The storage and use of hazardous materials at the facility are governed by federal, state, and local LORS to protect the environment from contamination and to protect facility workers and the surrounding community from exposure to hazardous materials. The applicable LORS are summarized in Table 5.5-5 and described in the following sections.

Table 5.5-5. Laws, Ordinances, Regulations, and Standards for Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Federal			
Section 302, EPCRA (Public Law 99-499, 42 USC 11022) Hazardous Chemical Reporting: Community Right-To-Know (40 CFR 370)	Requires one-time notification if EHSs are stored in excess of TPQs.	Alameda County Department of Environmental Health	An HMBP will be prepared and provided within the CERS submittal (Section 5.5.4.2).
Hazards Chemical Reporting: Community Right-To-Know (40 USC 11002)			
Section 304, EPCRA (Public Law 99-499, 42 USC 11002) Emergency Planning and Notification (40 CFR 355)	Requires notification when there is a release of hazardous material in excess of its RQ.	Alameda County Department of Environmental Health	An HMBP will be prepared to describe notification and reporting procedures (Section 5.5.4.2).
Emergency Planning Notification			
Section 311, EPCRA (Public Law 99-499, 42 USC 11021) Hazardous Chemical Reporting: Community Right-To-Know (40 CFR 370)	Requires that SDSs for all hazardous materials or a list of all hazardous materials be submitted to the State Emergency Response Commission, LEPC, and Alameda County Department of Environmental Health.	Alameda County Department of Environmental Health	The HMBP to be prepared will include a list of hazardous materials for submission to agencies (Section 5.5.4.2).
Hazards Chemical Reporting: Community Right-To-Know (40 USC 370)			
Section 313, EPCRA (Public Law 99-499, 42 USC 11023) Toxic Chemical Release Reporting: Community Right-To-Know (40 CFR 372)	Requires annual reporting of releases of hazardous materials.	Alameda County Department of Environmental Health	The HMBP to be prepared will describe reporting procedures (Section 5.5.4.2).

LORS	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Toxic Chemical Release Reporting: Community Right-To-Know (40 CFR 372)			
Section 112, CAA Amendments (Public Law 101 – 549, 42 USC 7412) Chemical Accident Prevention Provisions (40 CFR 68)	Requires facilities that store a regulated hazardous material at quantities greater than the threshold quantity to develop an RMP	Alameda County Department of Environmental Health	An RMP is not required.
Section 311, CWA (Public Law 92–500, 33 USC 1251 et seq.) Oil Pollution Prevention (40 CFR 112) Oil Pollution Prevention (40 CFR 112)	Requires preparation of an SPCC Plan if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons. The facility will have petroleum in excess of the aggregate volume of 1,320 gallons.	RWQCB, CUPA, Alameda County Department of Environmental Health	An SPCC Plan will be prepared (Section 5.5.4.2).
State			
Health and Safety Code, Section 25500, et seq. (HMBP)	Requires preparation of an HMBP if hazardous materials are handled or stored in excess of threshold quantities.	Cal/OSHA, but submitted to Alameda County Department of Environmental Health	An HMBP will be prepared and provided within the CERS submittal (Section 5.5.4.2).
Health and Safety Code Section 25531 through 25543.4 (CalARP)	Requires registration with local CUPA or lead agency and preparation of RMP if regulated substances are handled or stored in excess of threshold planning quantities	Alameda County Department of Environmental Health	An RMP is not required.
Health and Safety Code, Section 25270 through 25270.13 (Aboveground Petroleum Storage Act)	Requires preparation of an SPCC Plan if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons. The facility will have petroleum in excess of the aggregate volume of 1,320 gallons.	RWQCB, Alameda County Department of Environmental Health	An SPCC Plan will be prepared (Section 5.5.4.2).
Occupational Safety and Health Act (19 CFR 1910.119)	For chemicals listed above thresholds listed in Appendix A, requires a PSM plan for preventing or minimizing the consequences of catastrophic release of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire, or explosive hazards.	Alameda County Department of Environmental Health	A PSM plan will not be required because no chemicals that trigger a PSM plan will be used for the Project (Section 5.5.2)

LORS	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Local			
Alameda County East Area Plan	Preserve and enhance agriculture and agricultural lands, and protect the natural qualities, the wildlife habitats, the watersheds, and the beautiful open space of Alameda County from excessive, badly located, and harmful development	Alameda County Community Development Agency	Section 5.5.5.3.2
Hazardous Waste Generator Program – CUPA various programs	The Alameda County Department of Environmental Health Hazmat Division is certified by the CalEPA as the local CUPA for Alameda County that regulates and conducts inspections of businesses that handle hazardous materials, hazardous wastes, or have underground storage tanks. The Project will comply with HMBP requirements concerning storage and handling of hazardous materials and wastes and will also cooperate with the agency on resolution of any environmental issues at the site.	Alameda County Department of Environmental Health and Alameda County Fire Department	The site will participate in the Hazardous Waste Generator Program, as hazardous waste will be generated periodically by the Project in small quantities. Section 5.5.4.2

Notes:
CalARP = California Accidental Release Prevention program
CERS = California Environmental Reporting System
CWA = 1972 Amendments to the Federal Water Pollution Control Act, commonly known as the Clean Water Act
EHS = Extremely Hazardous Substances
EPCRA = Emergency Planning and Community Right-to-Know Act of 1986
LEPC = Local Emergency Planning Committee
PSM = process safety management
RMP = risk management plan
RWQCB = Regional Water Quality Control Board
SDS = Safety Data Sheet
TPQ = Threshold planning quantity
USC = United States Code

5.5.5.1 Federal LORS

Hazardous materials are governed under CERCLA, the Clean Air Act (CAA), and the CWA.

5.5.5.1.1 29 CFR Sections 1910 et seq. and 1926 et seq.

These sections contain requirements for equipment used to store and handle hazardous materials for the purpose of protecting worker health and safety. This regulation also addresses requirements for equipment necessary to protect workers in emergencies. It is designed primarily to protect worker health, but also contains requirements that affect general facility safety. The California regulations contained in Title 8 (California equivalent of 29 CFR) are generally more stringent than those contained in Title 29. The administering agencies are the U.S. Occupational Safety and Health Administration (OSHA) and Cal/OSHA.

5.5.5.1.2 49 CFR Parts 172, 173, and 179

These regulations provide standards for labels, placards, and markings on hazardous materials shipments by truck (Part 172), for packaging hazardous materials (Part 173), and for transporting hazardous materials in tank cars (Part 179). The administering agencies are the CHP and the DOT.

5.5.5.1.3 CERCLA

The Superfund Amendments and Reauthorization Act (SARA) amends CERCLA and governs hazardous substances. The applicable part of SARA for the proposed Project is Title III, otherwise known as the EPCRA, which requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous substances present at facilities in local communities. The law provides primarily for planning, reporting, and notification concerning hazardous substances. Key sections of the law are as follows:

- Section 302—Requires one-time notification when Extremely Hazardous Substances (EHSs) are present exceeding their TPQs. EHSs and their TPQs are found in Appendixes A and B of 40 CFR Part 355.
- Section 304—Requires immediate notification to the Local Emergency Planning Committee (LEPC) and the State Emergency Response Commission when a hazardous material is released in excess of its RQ. If a CERCLA-listed hazardous substance RQ is released, notification also must be given to the National Response Center in Washington, DC. (RQs are listed in 40 CFR Part 302, Table 302.4.) These notifications are in addition to notifications given to the local emergency response team or fire personnel.
- Section 311—Requires that either SDSs for all hazardous materials or a list of all hazardous materials be submitted to the State Emergency Response Commission, LEPC, and local fire department.
- Section 313—Requires annual reporting of hazardous materials released into the environment either routinely or as a result of an accident.

The administering agencies are EPA Region 9, the National Response Center, and the Alameda County Department of Environmental Health (the designated CUPA).

5.5.5.1.4 Clean Air Act

Regulations (40 CFR 68) under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities storing a TQ or greater of listed regulated substances to develop an RMP, including hazard assessments and response programs to prevent accidental releases of listed chemicals. Section 112(r)(5) of the CAA discusses the regulated substances. These substances are listed in 40 CFR 68.130.

5.5.5.1.5 Clean Water Act

The SPCC rule under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Regulations (40 CFR 112) under the CWA require facilities to prepare a written SPCC Plan if they store oil and its release would pose a threat to navigable waters. The SPCC rule is applicable if a facility has a single oil AST with a capacity greater than 1,320 gallons, or underground storage capacity greater than 42,000 gallons. The SPCC rule is administered by the local CUPA, which is the Alameda County Department of Environmental Health.

Other related federal laws that address hazardous materials but do not specifically address their handling include the Resource Conservation and Recovery Act (which is discussed in Section 5.14, Waste Management) and the Occupational Safety and Health Act (which is discussed in Section 5.16, Worker Health and Safety).

5.5.5.2 State LORS

California laws and regulations relevant to hazardous materials handling at the Project include Health and Safety Code Section 25500 (hazardous materials), Health and Safety Code 25531 (regulated substances), and the Aboveground Petroleum Storage Act (petroleum in aboveground tanks).

5.5.5.2.1 Title 8, CCR, Section 339; Section 3200 et seq.; Section 5139 et seq.; and Section 5160 et seq.

Title 8 CCR Section 339 lists hazardous chemicals relating to the Hazardous Substance Information and Training Act; Title 8 CCR Section 3200 et seq. and 5139 et seq. address control of hazardous substances; and Title 8 CCR Section 5160 et seq. addresses hot, flammable, poisonous, corrosive, and irritant substances.

5.5.5.2.2 Health and Safety Code Section 25500

California Health and Safety Code, Section 25500, et seq., and the related regulations in 19 CCR 2620, et seq., require local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit an HMBP to their local CUPA and to report releases to their CUPA and the State Office of Emergency Services. The TQs for hazardous materials are 55 gallons for fluids, 500 pounds for solids, and 200 cubic feet for compressed gases measured at standard temperature and pressure.

5.5.5.2.3 Health and Safety Code Section 25531 (CalARP)

California Health and Safety Code, Section 25531, et seq., and CalARP regulate the registration and handling of regulated substances. Regulated substances are any chemicals designated as an EHS by EPA as part of its implementation of SARA Title III. Health and Safety Code Section 25531 overlaps or duplicates some of the requirements of SARA and the CAA. Facilities handling or storing regulated substances at or above TPQs must register with their local CUPA.

5.5.5.2.4 Aboveground Petroleum Storage Act

The California Health and Safety Code, Sections 25270 to 25270.13, ensure compliance with the CWA. The law applies to facilities that operate a petroleum AST with capacity greater than 1,320 gallons, or oil-filled equipment where there is a reasonable possibility that the tank(s) or equipment may discharge oil in “harmful quantities” into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare an SPCC Plan.

5.5.5.2.5 Proposition 65

Proposition 65, which requires the state to identify chemicals that cause cancer and reproductive toxicity, contains requirements for informing the public of the presence of these chemicals, and prohibits discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically by California’s Office of Environmental Health Hazard Assessment. The Project will have battery electrolytes, which are listed on the cancer-causing and reproductive-toxicity lists of Proposition 65.

5.5.5.2.6 CVC Section 32100.5

CVC Section 32100.5 regulates the transportation of hazardous materials that pose an inhalation hazard. No substances posing an inhalation hazard will be transported to the facility.

5.5.5.3 Local LORS

5.5.5.3.1 Alameda County Municipal Code, Title 6, Chapter 6.04: Alameda County Fire Code

This code incorporates the California Fire Code into the Alameda County Municipal Code and providing for fees, a board of appeals, provisions for violations, and provisions for stop work orders. In addition, requirements for automatic fire sprinkler systems and fire alarm and detection systems are provided.

5.5.5.3.2 East County Area Plan

The purpose of the East County Area Plan (ECAP) is to present a clear statement of Alameda County's intent concerning future development and resource conservation within East County (Alameda County Community Development Agency Planning Department 1994). The goals and policies in the ECAP are intended to inform decisionmakers, the general public, public agencies, and those doing business in the county of Alameda County's position on land use-related issues and to provide guidance for day-to-day decision-making. The programs that follow the policies identify a set of specific actions Alameda County will undertake to achieve the goals and policies of the plan.

The Land Use and Environmental Health and Safety Elements of the ECAP contain goals and policies related to hazards and the proposed Project that are not related to wildfire (Alameda County 2000):

Goal: To minimize the risks to lives and property due to environmental hazards.

- Policy 139: The County shall adhere to the provisions of the Alameda County Fire Protection Master Plan and Fire Hazard Mitigation Plan.
- Policy 320: The County shall consider, in reviewing development projects and subdivision of agricultural lands, the severity of natural fire hazards, potential damage from wildland and structural fires, the adequacy of fire protection services, road access, and the availability of an adequate water supply and pressure.
- Policy 323: The County shall refer development applications to the County Fire Patrol, or local fire district, for review and recommendation.

5.5.5.3.3 Alameda County Local Hazard Mitigation Plan

The Alameda County Local Hazard Mitigation Plan (LHMP) was last updated in 2021. It was adopted by the Board of Supervisors and approved by the Federal Emergency Management Agency (FEMA) in March 2022. The purpose of the plan, a requirement of FEMA, is to identify the natural hazards in the area, determine how they will impact the community, and develop strategies to reduce the effect of those hazards and create a more disaster-resilient county. The plan includes a discussion of climate change adaptation and will also maximize the Community Rating System (CRS) credit for residents under the auspices of the National Flood Insurance Program (Alameda County 2022).

5.5.5.4 Codes

The design, engineering, construction, and operation of hazardous materials storage and dispensing systems will be in accordance with all applicable codes and standards, including the following:

- CVC, 13 CCR 1160, et seq.—Provides CHP with authority to adopt regulations for the transportation of hazardous materials in California. CHP can issue permits and specify the route for hazardous material delivery.
- The 2022 California Fire Code, Title 24, Part 9, Articles 79 and 80—These are the hazardous materials sections of the Fire Code. Local fire agencies or departments enforce this code and can require that an HMBP and a Hazardous Materials Inventory Statement be prepared. The California Fire Code is based on the federal fire guidelines, which include the Uniform Fire Code.

- State Building Standard Code, Health and Safety Code Sections 18901 to 18949—Incorporates the Uniform Building Code, Uniform Fire Code, and Uniform Plumbing Code.
- The Alameda County Municipal Code, Title 6, Chapter 6.04, Alameda County Fire Code—Incorporates the California Fire Code, provides provisions for fees, a board of appeals, violations, stop work orders, automatic fire sprinkler systems, and fire alarm and detection systems.

5.5.6 Agencies and Agency Contacts

Several agencies regulate hazardous materials, and they will be involved in regulating the hazardous materials stored and used at the Project. At the federal level, EPA will be involved; at the state level, the California Environmental Protection Agency will be involved. However, local agencies primarily enforce hazardous materials laws. For the Project, the primary local agencies with jurisdiction will be the Alameda County Department of Environmental Health and the Alameda County Fire Department. Contact information is shown in Table 5.5-6.

Table 5.5-6. Agency Contacts for Hazardous Materials Handling

Issue	Agency	Contact
HMBP	Alameda County Department of Environmental Health, Hazardous Materials Division (CUPA)	Alameda County Department of Environmental Health Matthew Soby 1131 Harbor Bay Parkway Alameda, CA 94502-6577 510.567.6841 Matthew.soby@acgov.org
Fire Department Permits	Alameda County Fire Department	Alameda County Fire Department Bonny Terra 6363 Clark Avenue Dublin, CA 94568 510.632.3473 or 925.833.3473, ext. 1210 countysp@acgov.org
SPCC	Alameda County Department of Environmental Health, Hazardous Materials Division	Alameda County Department of Environmental Health Matthew Soby 1131 Harbor Bay Parkway Alameda, CA 94502-6577 510.567.6841 Matthew.soby@acgov.org
AST Permits	Alameda County Department of Environmental Health, Hazardous Materials Division	Alameda County Department of Environmental Health Matthew Soby 1131 Harbor Bay Parkway Alameda, CA 94502-6577 510.567.6841 Matthew.soby@acgov.org

Issue	Agency	Contact
Hazardous Materials Response	Alameda County Fire Department	Alameda County Fire Department Bonny Terra 6363 Clark Avenue Dublin, CA 94568 510.632.3473 or 925.833.3473 ext. 1210 countysp@acgov.org
	Station 20	Station 20 Battalion Chief 7000 East Ave, Livermore, California In case of emergency: 911 510.632.3473
	Alameda County Department of Environmental Health, Hazardous Materials Division	Alameda County Department of Environmental Health Matthew Soby 1131 Harbor Bay Parkway Alameda, CA 94502-6577 510.567.6841 Matthew.soby@acgov.org

5.5.7 Permits and Permit Schedule

The Alameda County Department of Environmental Health requires permits to be provided within the California Environmental Reporting System (CERS) submittal before storing hazardous materials onsite. Table 5.5-7 identifies the permits for hazardous materials handling.

Table 5.5-7. Permits for Hazardous Materials Handling

Submittal	Agency Contact	Schedule
HMBP	Alameda County Department of Environmental Health – CUPA Matthew Soby 1131 Harbor Bay Parkway Alameda, CA 94502-6577 510.567.6841	Submit HMBP approximately 30 days before any hazardous materials come onsite, and annually thereafter to ACDEH via CERS

5.5.8 References

U.S. Department of Transportation (DOT). 2020. *Emergency Response Guidebook*.

Alameda County Fire Department. 2025. Personal communication between Station 20 and Sam Schoevaars, Jacobs; discussed first response fire department. January 29

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Alameda County Community Development Agency Planning Department. 1994. *East County Area Plan, A Portion of the Alameda County General Plan, Volume 1: Goals, Policies, and Programs*. Available at https://www.acgov.org/cda/planning/generalplans/documents/EastCountyAreaPlancombined.pdf. Accessed November 22.

Alameda County. 2022. *Final 2021 Alameda County Local Hazard Mitigation Plan.* Available at lhmp.acgov.org/documents/FinalHMP_AlamedaCo_Mar2022.pdf. Accessed December 5.

Alameda County. 2024. *Alameda County, California – Municipal Code, Title 6.* Available at 6.04.080 - Automatic fire sprinkler systems. | Code of Ordinances | Alameda County, CA | Municode Library. Accessed December 16.

5.6 Land Use

This section discusses the environmental and regulatory setting and includes the analysis of potential land use impacts associated with the Viracocha Hill Battery Energy Storage System Project (Viracocha Hill BESS or Project), a 362.8-MW-hr BESS project in Alameda County, California, adjacent to the proposed Sand Hill Wind Repower project. For the purposes of this section, the affected environment study area (study area) is defined as those areas within one mile of the Project and 0.25 mile of related ancillary facilities (Title 20, California Code of Regulations [CCR], Appendix B). Section 5.6.1 describes the environment that could be affected by the Project. Section 5.6.2 presents an environmental analysis of potential Project impacts. Section 5.6.3 discusses potential cumulative effects. Section 5.6.4 presents recommended measures to mitigate significant impacts. Section 5.6.5 presents the laws, ordinances, regulations, and standards (LORS) applicable to land use. Section 5.6.6 provides the agencies and agency contacts for land use issues. Section 5.6.7 provides a discussion of permits and Section 5.6.8 lists the references used in preparing this section.

5.6.1 Affected Environment

This section discusses the affected environment.

5.6.1.1 Location

The Project study area is located within unincorporated Alameda County, California. The proposed Project is in the Altamont Pass, approximately 0.8 mile southwest of the Bethany Reservoir. The Project is accessible via an existing access road connecting to Altamont Pass Road. The city limits of Tracy are approximately 3.3 miles east of the Project site. In addition to Bethany Reservoir, the area surrounding the Project includes operating wind power generation facilities and the Altamont Landfill approximately 0.5 mile to the west.

5.6.1.2 Existing Land Uses

Existing land use at the Project site is undeveloped grasslands used as pasture for livestock. The Project site is surrounded by an operating wind power generation facility that has undergone repowering upgrades since the early 2000s (Google Earth Pro 2024). The Project site is within the Alameda County East County Area Plan (ECAP) Large Parcel Agriculture (LPA) land use designation (Alameda County 2000). The zoning designation is Agriculture (A) with combining BE district (A-BE) (Alameda County 2024a). Figures 5.6-1 and 5.6-2 detail the land use and zoning designations for the Project site. The surrounding area includes the Altamont Landfill to the west, the Bethany Reservoir to the north, and operating farmland to the east.

The Ralph Substation is approximately 0.2 mile east of the proposed BESS facility. Nearby high-voltage transmission lines bisect the subject parcel, running northwest-southeast, approximately 650 feet east of the Project site. Additional high-voltage transmission lines run north-south approximately 100 feet west of the Project site and east-west approximately 500 feet south of the gen-tie line. The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

5.6.1.3 Important Farmland

The California Department of Conservation's (DOC's) Farmland Mapping and Monitoring Program (FMMP) developed categorical definitions of important farmlands for land inventory purposes. Important farmlands provide the best opportunity for agricultural production. According to the FMMP, the Project site is designated as Grazing Land (Figure 5.6-3). There is no Prime Farmland, Farmland of Statewide Importance, or Unique Farmland present on the parcel (DOC 2024a). Grazing Land is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities (DOC 2024a).

5.6.1.4 Williamson Act

The California Land Conservation Act, better known as the Williamson Act, has been the state's primary agricultural land protection program since its enactment in 1965. More than 16 million of the state's 30 million acres of farm and ranch land are currently protected under the Williamson Act. The Williamson Act creates an arrangement whereby private landowners agree with counties and cities to voluntarily restrict land in designated Agricultural Preserve areas to agricultural, recreational, and open-space uses, and other compatible uses. In return, the landowner receives property tax assessments that are lower than normal because the assessments are based on the restricted uses rather than full market value. Local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971. Williamson Act contracts automatically renew each year for a new 10-year period, unless either party files a "notice of non-renewal" to terminate the contract before the end of the current 10-year period. During the ensuing 10-year non-renewal period following a "notice of non-renewal," property taxes are gradually raised to the applicable level for developable land. The Williamson Act also authorizes cities and counties to establish Farmland Security Zones within existing Agricultural Preserves and to enter into Farmland Security Zone contracts with a minimum initial term of 20 years, with annual renewal similar to a Williamson Act contract. To be eligible for a Farmland Security Zone contract, the subject land must be designated on the Important Farmland Series maps as predominantly prime farmland, farmland of statewide importance, unique farmland, or farmland of local importance. The California Williamson Act Enrollment Finder indicates the Project site is enrolled in a Williamson Act contract but does not meet any of the criteria for classification as "prime agricultural land" (DOC 2024b).

5.6.1.5 Surrounding Land Uses

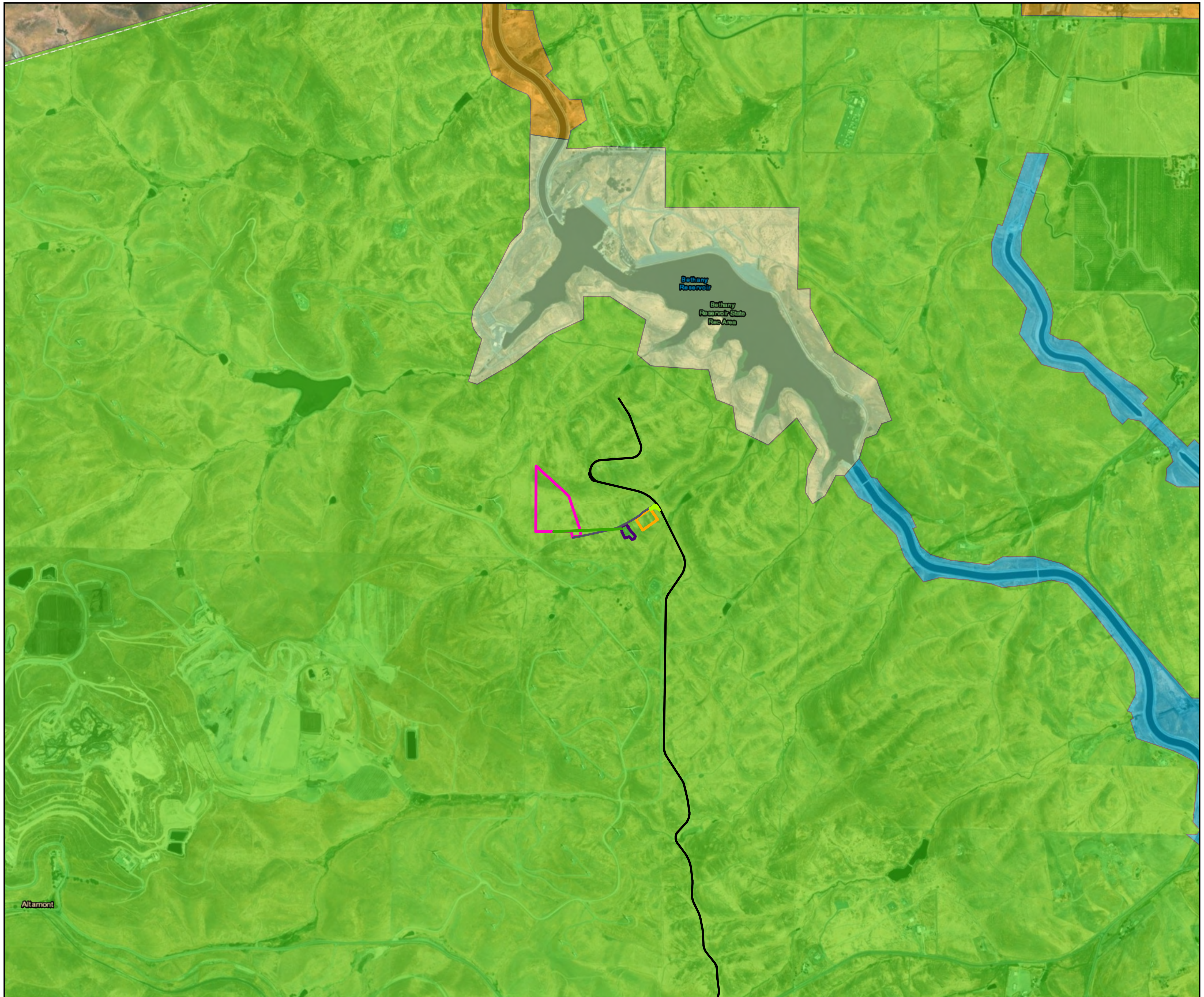
This section provides a description of land uses surrounding the Project. Current surrounding land uses include agricultural, open space, recreational, wind energy generation, and landfill operations. The land immediately surrounding the entire site is designated as LPA land use in the General Plan and is zoned A with combining BE district (A-BE) by Alameda County. Land northeast of the Project site encompassing the Bethany Reservoir includes land designated in the Alameda County General Plan as Parklands. Refer to Figure 5.6-1 for land use designations surrounding the Project site. Refer to Figure 5.6-2 for zoning designations surrounding the Project site.

Table 5.6-1 lists current land uses, zoning, and land use designations on lands near the Project.

Table 5.6-1. Land Uses Within Study Area

Location From Project Site	Current Use	Zoning/General Plan Land Use Designation
North and northeast of the Project	Reservoir, Recreation; Transmission and Utility; Grazing	Zoning: A, A-BE General Land Use Plan Designation (East County Area Plan): Large Parcel Agriculture, Parklands
East of the Project	Undeveloped; Grazing	Zoning: A, A-BE General Land Use Plan Designation (East County Area Plan): Large Parcel Agriculture, Water Management
South of the Project	Wind Energy Power Generation, Utility; Grazing	Zoning: A-BE General Land Use Plan Designation (East County Area Plan): Large Parcel Agriculture
West of the Project	Wind Energy Power Generation, Landfill, Grazing	Zoning: A-BE General Land Use Plan Designation (East County Area Plan): Large Parcel Agriculture

Sources: Alameda County 2000, 2024b; Unincorporated Alameda County Public Access Map



Legend

- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)

Alameda County Land Use

- Large Parcel Agriculture
- Major Public
- Parklands
- Water Management

Source:
1) ESRI Aerial Images

N

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Miles

Figure 5.6-1
General Plan Land Use
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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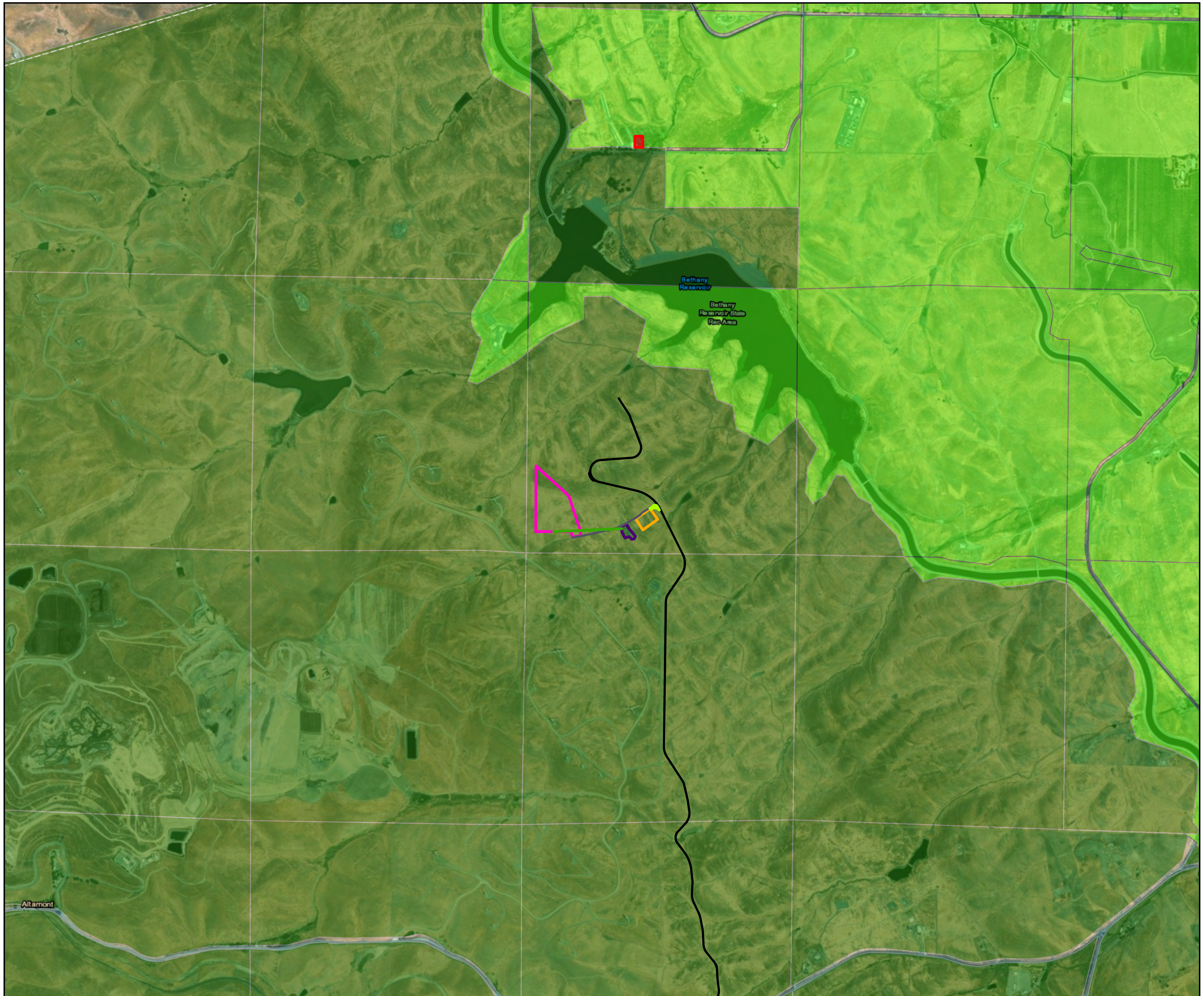

Legend

- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)

Alameda County Zoning Area

- A - Agriculture
- A-BE - Agriculture Combining BE District
- M2 - Heavy Industrial

Source:
1) ESRI Aerial Images

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Figure 5.6-2
Zoning Designations
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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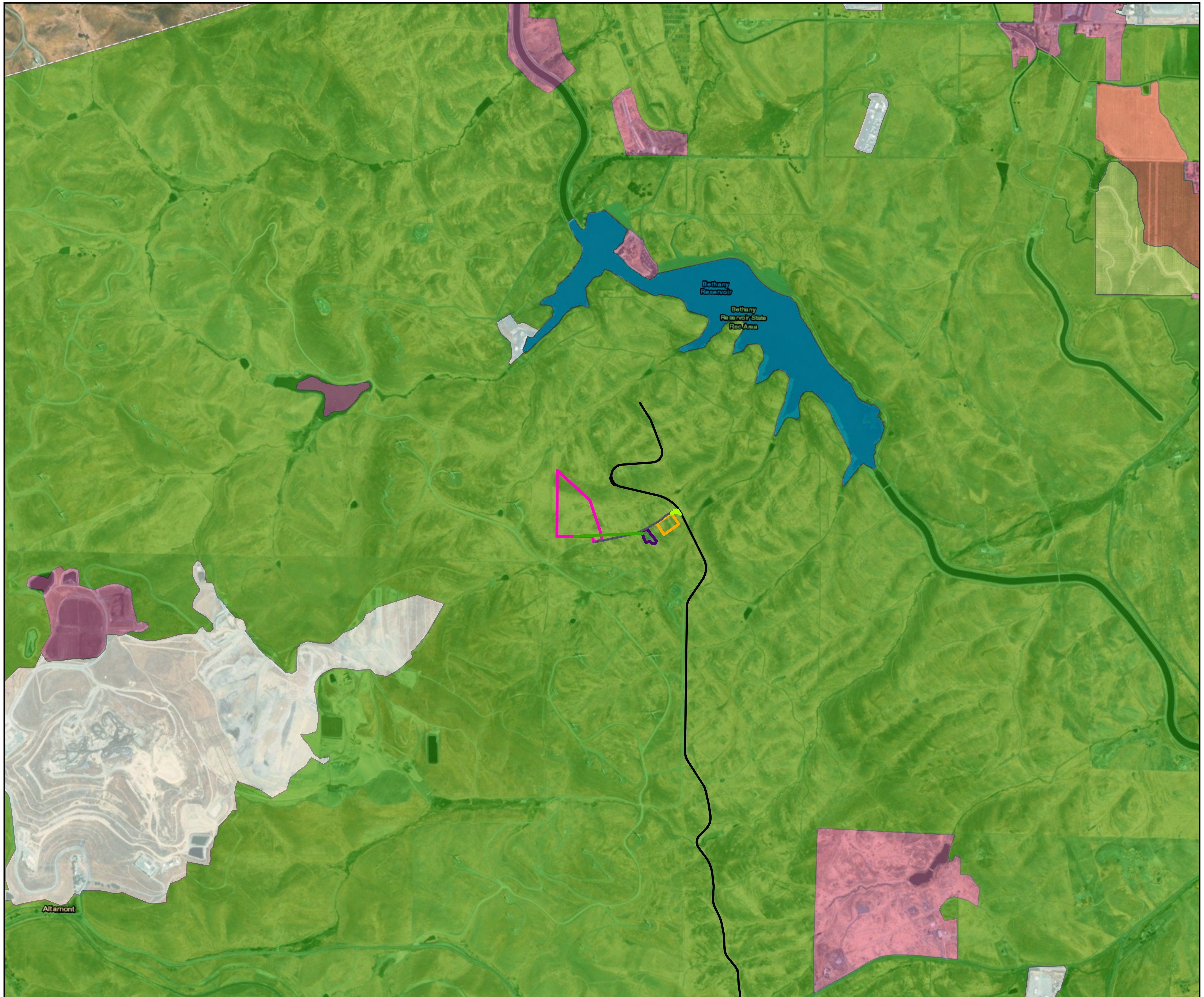

Legend

- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)

Important Farmland Categories

- D - Urban and Built-up Land
- G - Grazing Land
- P - Prime Farmland
- S - Farmland of Statewide Importance
- U - Unique Farmland
- W - Water
- X - Other Land

Source:
1) ESRI Aerial Images

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Figure 5.6-3
Important Farmland
Viracocha Hill BESS Project
Alameda County, California

Jacobs

5.6.1.5.1 Sensitive Land Uses

Sensitive receptors include residences, schools, care facilities, places of worship, and recreational facilities. Table 5.6-2 lists sensitive receptors within the Project study area.

Table 5.6-2. Sensitive Land Uses in the Project Study Area

Approximate Distance from the Project Site (miles)	Current Use	Zoning/General Plan Land Use Designation
0.75 (northwest)	Bethany Reservoir State Recreation Area	A and A-BE/Parklands
1.75 (southeast)*	Residence	A/Large Parcel Agriculture

Sources: Alameda County 2024b; Unincorporated Alameda County Public Access Map 2024

* Nearest residence is outside of the Study Area and described further in Section 5.6.1.5.3

5.6.1.5.2 Industrial Land Uses

No land designated as industrial use was identified in the Project study area. However, industrial operations occur within the study area, including operating wind power generation facilities and the Altamont Landfill. One industrial-zoned property designated as Heavy Industrial (M2) is located approximately 1.25 miles north of the Project site (Figure 5.6-2).

5.6.1.5.3 Residential Land Uses

No land use designated or zoned as residential was identified in the Project study area (Figures 5.6-1 and 5.6-2). The nearest permanent private residence is located in unincorporated Alameda County approximately 1.75 miles to the southeast.

The nearest communities to the Project site include Tracy, approximately 3 miles east; Livermore 6 miles southwest; and Mountain House approximately 4 miles east. The residential areas in these communities are low to medium density residential zoning.

5.6.1.5.4 Agricultural Land Uses

The Project study area is primarily composed of A-BE zoning in Alameda County (Figure 5.6-2). As shown on Figure 5.6-3, the FMMP designates the Project as Grazing Land. The Project and surrounding land have previously been used for cattle grazing. A review of historic aerial imagery indicates the surrounding area has been used for wind energy generation for the past two decades (Google Earth Pro 2024).

5.6.1.5.5 Recreation

Recreational opportunities are present at the Bethany Reservoir State Recreation Area, which is a 293-acre park approximately 0.8 mile north of the Project site. The reservoir was created in 1964 by the construction of the Bethany Reservoir Dam on the California Aqueduct and is a popular place for water-oriented recreation, especially fishing and windsurfing. It also features a bike trail along the California Aqueduct Bikeway. Visitors also can rent boats and kayaks from the park office.

5.6.1.5.6 Open Space

Under Section 65560 of the State Government Code, open space is defined as any parcel or area of land or water that is essentially unimproved and devoted to an open space use and that is designated on a local, regional, or state open space plan as any of the following: open space for the preservation of natural resources, open space used for the managed production of resources, open space for outdoor recreation, or open space for public health and safety. The Bethany Reservoir State Recreation Area meets this definition of open space.

5.6.1.5.7 Scenic Areas

Section 5.13, Visual Resources, provides a discussion of scenic resources in the study area.

5.6.1.5.8 Natural Resource Protection

The study area is not located in any natural resource protection plans. The Alameda County ECAP identifies the entire study area as part of the “wind resource area,” where the County is directed to discourage the development of uses and structures that are not compatible with wind energy operations (Alameda County 2000).

5.6.1.5.9 Natural Resource Extraction

No areas of natural resource extraction were identified in the Project study area. The Alameda County ECAP dictates that no new quarry or open-pit mine may be approved outside the East County Urban Growth Boundary unless approved by the voters. Excavation not adjacent to an existing quarry site and on the same or adjoining parcel is regarded as a new quarry (Alameda County 2000).

5.6.1.5.10 Schools, Childcare Centers, and Nursing Homes

No schools, child daycare facilities, or assisted living/nursing homes are within 1 mile of the Project site. The Project is within the Lammersville Unified School District, and the nearest school is Mountain High House Elementary School, located approximately 3 miles east. The nearest childcare center (Catalyst Kids-Altamont), library (Livermore Public Library), and nursing home facilities are approximately 3.5 to 9 miles away from the Project site.

5.6.1.5.11 Religious Facilities

No formal religious facilities are within 1 mile of the Project. Several religious facilities are in the communities of Livermore and Mountain House. The nearest religious facility, Affirming Hope Ministries, is located approximately 3.4 miles east of the Project site.

5.6.1.5.12 Cultural and Historic Areas

Section 5.3, Cultural Resources, provides a discussion of cultural and historic resources in the study area.

5.6.1.5.13 Unique Land Uses

No unique land uses other than the Altamont Landfill have been identified within the study area. The Altamont Landfill is one of the largest landfill operations in Northern California. The landfill accepts for disposal all non-hazardous municipal solid wastes, non-hazardous industrial and special wastes, de-watered wastewater treatment plant sludge (biosolids), treated auto shredder wastes, contaminated soils, liquids for solidification, and friable asbestos wastes put to other beneficial uses at the facility. The landfill also contains energy projects that include windmills, gas turbines, and landfill gas.

5.6.2 Environmental Analysis

5.6.2.1 Significance Criteria

Significance criteria for impacts on land use were determined through a review of applicable state and local regulations. Because of the California Energy Commission's (CEC's) Site Certification Process pursuant to the Warren-Alquist Act, which is a certified agency program pursuant to the California Environmental Quality act (CEQA), the following criteria developed from the CEQA Guidelines and the CEQA Checklist were used to evaluate whether the potential environmental impacts of the Project would:

1. Physically divide an established community
2. Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect
3. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;
4. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
5. Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
6. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

5.6.2.2 Potential Effects on Land Use during Project Construction and Operation

Impact: ***Will the Project physically divide an established community?***

No Impact. The Project site is not within an established community. Surrounding land uses are rural and include compatible energy generation and utility infrastructure. The Project would not physically divide or inhibit land uses in the study area.

Impact: ***Will the Project cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?***

Less-than-Significant Impact. The Project is located within unincorporated Alameda County and is subject to Alameda County land use plans and policies. Consistency of the Project with applicable local land use plans, policies, and regulations is detailed in Table 5.6.3 and the following sections.

Table 5.6-3. Project Conformity with Alameda County East County Area Plan (2000)

Goal/Policy	Project Consistency
***Goals, Policies and Programs* - Land Use**	
Urban and Rural Development (Incorporated and Unincorporated)	
Goal: To achieve a balanced subregion featuring compact communities, a diverse economic base, affordable housing, and a full complement of public facilities and amenities Phasing Policy 13: The County shall not provide nor authorize public facilities or other infrastructure in excess of that needed for permissible development consistent with the Initiative. This policy shall not bar 1) new, expanded or replacement infrastructure necessary to create adequate service for the East County, 2) maintenance, repair or improvements of public facilities which do not increase capacity, and 3) infrastructure such as pipelines, canals, and power transmission lines which have no excessive growth-inducing effect on the East County area and have permit conditions to ensure that no service can be provided beyond that consistent with development allowed by the Initiative. "Infrastructure" shall include public facilities, community facilities, and all structures and development necessary to the provision of public services and utilities.	Under Policy 13, the County is authorized to provide public facilities (including structures and development necessary to the provision of public services and utilities) provided they are not in excess of that needed for permissible development consistent with the ECAP. Policy 13 states that the new, expanded infrastructure necessary to create adequate service for the East County shall not be barred. The Project proposes a utility-scale BESS with up to 400-MW-hr of capacity to support the state's pursuit of an environmentally clean and reliable electrical system. The Project is not designed to support any quantity of new development in Alameda County in excess of what is permissible under the ECAP and is not growth-inducing within the ECAP area.
General Open Space	
Goal: To protect regionally significant open space and agricultural land from development. Policy 54: The County shall approve only open space, park, recreational, agricultural, limited infrastructure, public facilities (e.g., limited infrastructure, hospitals, research facilities, landfill sites, jails, etc.) and other similar and compatible uses outside the Urban Growth Boundary.	The Project would be sited outside the Urban Growth Boundary near compatible uses. The surrounding area is primarily existing utility infrastructure development; therefore, the proposed Project is consistent with this policy as an approved use outside the Urban Growth Boundary.
Agriculture	
Goal: To maximize long-term productivity of East County's agricultural resources. Preservation of Productive Soils Policy 71: The County shall conserve prime soils (Class I and Class II, as defined by the USDA Soil Conservation Service Land Capability Classification) and Farmland of Statewide Importance and Unique Farmland (as defined by the California	The Project site is not irrigated and is not located on prime soils (Class I or Class II, as defined by the USDA Soil Conservation Service Land Capability Classification). No Farmland of Statewide Importance or Unique Farmland (as defined by the FMMP) is present on the Project site parcel. The entire Project site is designated as Grazing Land, which is designated to land primarily used for livestock grazing. The Project

Goal/Policy	Project Consistency
Department of Conservation Farmland Mapping and Monitoring Program) outside the Urban Growth Boundary.	would not interfere with grazing activities on other portions of the parcel or adjacent parcels.
Incompatible Uses Policy 73: The County shall require buffers between those areas designated for agricultural use and new non-agricultural uses within agricultural areas or abutting parcels. The size, configuration and design of buffers shall be determined based on the characteristics of the project site and the intensity of the adjacent agricultural uses, and if applicable, the anticipated timing of future urbanization of adjacent agricultural land where such agricultural land is included in a phased growth plan. The buffer shall be located on the parcel for which a permit is sought and shall provide for the protection of the maximum amount of arable, pasture, and grazing land feasible.	The proposed Project would be similar to and compatible with the existing uses, primarily utility infrastructure such as wind power generation, substations, and transmission lines, in the surrounding area. The Project site would be surrounded by fencing to serve as a buffer between the proposed BESS facility uses and surrounding low-intensity grazing uses, thereby preserving grazing land to the greatest extent feasible.
Williamson Act Contracts Policy 86: The County shall not approve cancellation of Williamson Act contracts within or outside the County Urban Growth Boundary except where findings can be made in accordance with state law, and the cancellation is consistent with the Initiative. In no case shall contracts outside the Urban Growth Boundary be canceled for purposes inconsistent with agricultural or public facility uses. Prior to canceling any contract inside the County Urban Growth Boundary, the Board of Supervisors shall specifically find that there is insufficient non-contract land available within the Boundary to satisfy state-mandated housing requirements. In making this finding, the County shall consider land that can be made available through reuse and rezoning of non-contract land.	Although the Project is enrolled in a Williamson Act contract, it would not require cancellation of a Williamson Act contract. The Act determined electrical facilities to be a compatible use, absent an express finding to the contrary (CA Gov. Code § 51238(a)(1)). Under the CEC Opt-In Application process, any compatible use determination would be within the CEC's jurisdiction.
Sensitive Viewshed	
Goal: To preserve unique visual resources and protect sensitive viewsheds. Visual Protection Policy 108: To the extent possible, including by clustering if necessary, structures shall be located on that part of a parcel or on contiguous parcels in common ownership on or subsequent to the date this ordinance becomes effective, where the development is least visible to persons on public roads, trails, parks and other public viewpoints. This policy does not apply to agricultural structures to the extent it is necessary for agricultural purposes that they be located in more visible areas.	Visual Resources will be discussed in Section 5.13, and will include measures designed to ensure the Project does not substantially degrade the existing visual character or quality of public views of the site and its surroundings. The Project's appearance would be comparable to surrounding existing development such as transmission lines, the Ralph Substation, and nearby wind turbines. Therefore, the Project would not result in any significant impacts on unique visual resources or sensitive viewsheds.

Goal/Policy	Project Consistency
Landscaping Policy 115: In all cases appropriate building materials, landscaping and screening shall be required to minimize the visual impact of development. Development shall blend with and be subordinate to the environment and character of the area where located, so as to be as unobtrusive as possible and not detract from the natural, open space or visual qualities of the area. To the maximum extent practicable, all exterior lighting must be located, designed and shielded so as to confine direct rays to the parcel where the lighting is located.	Section 5.13, Visual Resources, includes measures designed to ensure the Project does not substantially degrade the existing visual character or quality of public views of the site and its surroundings. In addition, exterior lighting for the Project would be directed downward as practicable.
Alteration of Landforms Policy 116: To the maximum extent possible, development shall be located and designed to conform with rather than change natural landforms. The alteration of natural topography, vegetation, and other characteristics by grading, excavating, filling or other development activity shall be minimized. To the extent feasible, access roads shall be consolidated and located where they are least visible from public viewpoints.	The Project has been designed to minimize the alteration of natural topography, vegetation, and other characteristics from grading, excavating, and filling. Proposed site grading and drainage is detailed in Section 2, Project Description. The Project would consolidate access by using an existing 0.3-mile access road.
Grading Policy 117: The County shall require that where grading is necessary, the off-site visibility of cut and fill slopes and drainage improvements is minimized. Graded slopes shall be designed to simulate natural contours and support vegetation to blend with surrounding undisturbed slopes.	Where grading is necessary at the Project site, off-site visibility of cut and fill slopes and drainage improvements would be minimized. Proposed site grading and drainage is detailed further in Section 2. After gen-tie line construction, all pads not needed for normal gen-tie maintenance would be restored to natural contours to the greatest extent feasible and would be revegetated where required.
Policy 118: The County shall require that grading avoid areas containing large stands of mature, healthy vegetation, scenic natural formations, or natural watercourses	The Project avoids areas containing large stands of mature, healthy vegetation, scenic natural formations, and natural watercourses.
Policy 119: The County shall require that access roads be sited and designed to minimize grading.	The Project would use an existing access road to minimize the develop new access roads. Improvement of the existing 0.3-mile-long access road would be designed to minimize grading to the greatest extent feasible. Proposed site grading and drainage is detailed further in Section 2.
Utilities Policy 120: The County shall require that utility lines be placed underground whenever feasible. When located above ground, utility lines and supporting structures shall be sited to minimize their visual impact.	As discussed in Section 5.13, the Project's utility lines and supporting structures would be sited to minimize visual impact. The proposed gen-tie line would be visually consistent with existing infrastructure in the vicinity, such as multiple existing steel-lattice transmission towers, the Ralph Substation, and wind turbines. The Project's utility lines and supporting structures would be sited to minimize visual impact.

Goal/Policy	Project Consistency
Biological Resources	
Goal: To preserve a variety of plant communities and wildlife habitat. Policy 123: Where site-specific impacts on biological resources resulting from a proposed land use outside the Urban Growth Boundary are identified, the County shall encourage that mitigation is complementary to the goals and objectives of the ECAP. To that end, the County shall recommend that mitigation efforts occur in areas designated as "Resource Management" or on lands adjacent to or otherwise contiguous with these lands in order to establish a continuous open space system in East County and to provide for long term protection of biological resources. Policy 125: The County shall encourage preservation of areas known to support special status species. Policy 126: The County shall encourage no net loss of riparian and seasonal wetlands.	Section 3.2, Biological Resources, will be submitted at a later date, and will evaluate whether the Project would result in any significant and unavoidable impacts on biological resources, including special-status species, riparian areas, and wetlands, with implementation of mitigation measures.
Hazard Zones	
Goal: To minimize the risks to lives and property due to environmental hazards. Policy 134: The County shall not approve new development in areas with potential natural hazards (flooding, geologic, wildland fire, or other environmental hazards) unless the County can determine that feasible measures will be implemented to reduce the potential risk to acceptable levels, based on site-specific analysis. Policy 135: The County, prior to approving new development, shall evaluate the degree to which the development could result in loss of lives or property, both within the development and beyond its boundaries, in the event of a natural disaster.	The Project would not be in an area with potential natural hazards, including geologic, wildland fire, or other environmental hazards. Refer to Section 5.4, Geological Hazards and Resources and Section 5.11, Soils, regarding geologic hazards and soils; Section 5.17, Wildfire, regarding wildland fire hazards; and Section 5.5, Hazardous Materials Handling, regarding other environmental hazards. Potential impacts associated with natural hazards were all determined to be less than significant.
Cultural Resources	
Goal: To protect cultural resources from development. Policy 136: The County shall identify and preserve significant archaeological and historical resources, including structures and sites which contribute to the heritage of East County. Policy 137: The County shall require development to be designed to avoid cultural resources or, if avoidance is determined by the County to be infeasible, to include implementation of appropriate mitigation measures that offset the impacts.	As discussed in Sections 5.3, Cultural Resources, a Cultural Resource Report has been prepared for the Project. Additionally, the CEC would initiate tribal consultation in accordance with AB 52 requirements. Impacts on cultural resources and tribal cultural resources would be mitigated to below a level of significance with implementation of mitigation measures.

Goal/Policy	Project Consistency
General Public Facilities	
Policy 138: The County shall allow development and expansion of major public facilities (e.g., hospitals, research facilities, landfill sites, jails, etc.) in appropriate locations inside and outside the Urban Growth Boundary consistent with the policies and Land Use Diagram of the East County Area Plan. Policy 139: The County shall ensure that new major public facilities are properly sited to avoid land use conflicts and potential health and safety risks.	The Project would be outside the Urban Growth Boundary and would be considered an allowable use in accordance with the ECAP. The Project would be in an area with similar development and therefore would avoid land use conflicts and potential health and safety risks.
Windfarms	
Goal: To maximize the production of wind generated energy. Policy 168: The County shall recognize the importance of wind power as a clean, renewable source of energy. Policy 169: The County shall allow for continued operation, new development, redevelopment, and expansion of existing and planned windfarm facilities within the limits of environmental constraints. Policy 171: The County shall work with the wind energy industry, public utilities, other agencies, and energy experts to monitor trends in wind energy developments, technology, and environmental safeguards. Policy 173: The County shall discourage the development of uses and structures that are not compatible with wind energy operations within the Wind Resource Area (as shown on Figure 4).	The Project would be located near several operating wind power generation facilities, including one less than 1 mile from the Project. BESS technology pairs well with the deployment of clean, renewable sources of energy because it improves reliability of intermittent power sources such as wind. As such, the BESS technology can be used to support continued operation, new development, redevelopment, and expansion of existing and planned windfarm facilities. The Project therefore would be highly compatible with development in the designated Wind Resource Area, as shown on Figure 4 of the ECAP.
Infrastructure and Services	
Goal: To provide infrastructure and services necessary to accommodate East County holding capacities in a logical, cost-effective, and timely manner. Policy 218: The County shall allow development and expansion of public facilities (e.g., parks and recreational facilities; schools; childcare facilities; police, fire, and emergency medical facilities; solid waste, water, storm drainage, flood control, subregional facilities; utilities etc.) in appropriate locations inside and outside the Urban Growth Boundary consistent with the policies and Land Use Diagram of the East County Area Plan.	The Project is a utility that would improve the reliability of intermittent power sources such as wind in a logical, cost-effective, and timely manner. The proposed Project would be consistent with the existing uses in the surrounding area, which are primarily comprised of utility infrastructure development (including wind power generation, substations, transmission lines), and, as demonstrated throughout this section, would be consistent with the policies of the ECAP.

Goal/Policy	Project Consistency
Police, Fire, and Emergency Medical Services	
Goal: To ensure the prompt and efficient provision of police, fire, and emergency medical facility and service needs. Policy 244: The County shall require that new developments are designed to maximize safety and security and minimize fire hazard risks to life and property.	As discussed in Section 5.17, Wildfire, impacts associated with wildfire would be less than significant. The Project would be designed to maximize safety and security and minimize fire hazard risks to life and property.
Water	
Goal: To provide an adequate, reliable, efficient, safe, and cost-effective water supply to the residents, businesses, institutions, and agricultural uses in East County. Policy 253: The County shall approve new development only upon verification that an adequate, long-term, sustainable, clearly identified water supply will be provided to serve the development, including in times of drought. Policy 254: The County shall encourage Zone 7 and local water retailers to require new development to pay the full cost of securing, conveying, and storing new sources of water.	As discussed in Section 5.15, Water Resources, sufficient water supply is available to support development, operation, and decommissioning of the Project.
Utilities	
Goal: To provide efficient and cost-effective utilities. Policy 285: The County shall facilitate the provision of adequate gas and electric service and facilities to serve existing and future needs while minimizing noise, electromagnetic, and visual impacts on existing and future residents	The Project is a utility that would improve the reliability of intermittent power sources such as wind in a logical, cost-effective, and timely manner. Impacts on visual resources will be discussed in Section 5.13; Project siting and design features as well as mitigation measures would minimize visual impacts. Impacts associated with noise will be discussed in Section 5.7; and it is anticipated the Project would incorporate attenuation measures into design to minimize noise impacts.
Air Quality	
Goal: To ensure that air pollution levels do not threaten public health and safety, economic development, or future growth. Policy 294: The County shall require new development projects to include traffic and air pollutant reduction measures to help attain air quality standards. For non-residential projects, these measures could include Transportation Demand Management programs such as ridesharing and transit promotion; for residential projects, these measures could include site plan features to reduce traffic trip generation such as mixed-use development and transit-oriented development.	An Air Quality and Greenhouse Gas Technical Report (Appendix 3.1) will be prepared. It is anticipated the Project would result in less-than-significant air quality impacts. The Project also is anticipated to have less-than-significant cumulative air quality impacts.

Goal/Policy	Project Consistency
Policy 296: The County shall review the cumulative impact of proposed projects for their potential effect on air quality conditions.	
Seismic and Geologic Hazards	
Goal: To minimize the risks to lives and property due to seismic and geologic hazards. Policy 309: The County shall not approve new development in areas with potential for seismic and geologic hazards unless the County can determine that feasible measures will be implemented to reduce the potential risk to acceptable levels, based on site-specific analysis. The County shall review new development proposals in terms of the risk caused by seismic and geologic activity. Policy 310: The County, prior to approving new development, shall evaluate the degree to which the development could result in loss of lives or property, both within the development and beyond its boundaries, in the event of a natural disaster.	As discussed in Section 5.4, Geological Hazards and Resources, impacts related to seismic and geologic hazards, including impacts related to erosion and slope stability, would be less than significant. Further, the Project would not result in loss of lives or property in the event of a natural disaster, including flooding, geologic, wildland fire, or other environmental hazards.
Fire Hazards	
Goal: To minimize the risks to lives and property due to fire hazards. Policy 320: The County shall consider, in reviewing development projects and subdivision of agricultural lands, the severity of natural fire hazards, potential damage from wildland and structural fires, the adequacy of fire protection services, road access, and the availability of an adequate water supply and pressure.	As discussed in Section 5.17, Wildfire, impacts related to wildfires would be less than significant. The Project would include adequate water supply and pressure for firefighting; site access would include gates and security fencing. Project design and operation would comply with Alameda County Fire Department requirements and other applicable electrical facility standards.

Project Conformity with Alameda County Climate Action Plans

The *Alameda County Climate Action Plan for Government Services and Operations* has a target of a 50% reduction in emissions by 2030 and carbon neutrality in building operations by 2045 (Alameda County 2023a). Although the Project is not directly a part of government services and operations, it would support this measure by increasing the reliability of renewable energy resources that may be used by the county government to reduce carbon emissions.

The County's Community Climate Action Plan (CCAP) acknowledges the goal for becoming carbon neutral by 2045 and includes an implementation strategy that will be key to achieving the County's goals and ensuring equity in the design and execution of specific actions in the plan. The County's CCAP Chapter 5 outlines key infrastructure measures on the topic of clean and reliable energy that are necessary to reduce emissions in the County. Measure IN-1.2 and Measure IN-1.3 directly support the development and expansion of battery storage technology (Alameda County 2023b). As noted previously, the Project would increase the reliability of renewable energy resources.

Project Conformity with the Alameda County Municipal Code

The Project site is located entirely within the A-BE zoning. The Alameda County Municipal Code does not explicitly specify BESS use as an allowed or conditional use. Because BESS is an emerging technology, many municipal codes across the state are also silent on BESS as an allowed or conditional use. However, BESS projects are akin to "public utility" uses already contemplated in most jurisdictional codes. In Alameda County Municipal Code Title 17, Chapter 17.06.040(J), public utility uses are allowed with approval of a Conditional Use Permit. Further, the Alameda County Municipal Code includes provisions under Chapter 17.54.060 for uses that are of the same character as a conditional use to be found conditionally permitted. The AB 205 Opt-in Application package will be submitted to the CEC in lieu of a Conditional Use Permit with the County.

Project Conformity with the Alameda County Planning Department Large Commercial Solar and Battery Storage Statement of Policy Components

The Alameda County Planning Department Large Commercial Solar and Battery Storage Statement of Policy Components (Statement of Policy; Alameda County 2022) was adopted by the Board of Supervisors on May 12, 2022. The Statement of Policy acknowledges (1) the ongoing climate change crisis and the need to mitigate its impacts; and (2) the statewide goals of reducing dependence on fossil fuels and increasing renewable energy resources. The Statement of Policy recognizes that the significant need to provide renewable resources, and that a thoughtful and measured contribution to this effort by Alameda County is consistent with the County's stated goals related to reducing dependency on fossil fuels and addressing climate change. The Statement of Policy specifically allows for approvals of battery storage projects within the County's Large Parcel Agriculture (LPA) designated areas through a conditional use permit process. The County has not yet updated its Zoning Code to reflect the Statement of Policy. The AB 205 Opt-in Application package will be submitted to the CEC in lieu of a Conditional Use Permit with the County.

Entitlement History

The Project Applicant has not submitted any other permits or entitlement requests outside of this Opt-In Application.

Therefore, based on this consistency analysis, the Project would not conflict with an applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, and impacts would be less than significant.

Impact: ***Would the Project conflict with an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?***

No Impact. The Viracocha BESS project is within the East Alameda County Conservation Strategy plan area (ICF 2010). Section 3.2 Biological Resources is currently underway and an impact analysis will be provided at a later date. It is assumed at this time that the Project would be implemented consistent with the County Conservation Strategy and no impact would occur

Impact: ***Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use, excepting those lands that would be expected to be converted or retired even without the project due to insufficient water resources for continued commercial agriculture, land subsidence due to historic groundwater over-pumping, soil contamination due to inadequate drainage, or the local weather effects of climate change?***

No Impact. The Project site is on land categorized as Grazing Land and does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance per the FMMP. Therefore, the Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses, and no impacts would occur.

Impact: ***Would the Project conflict with existing zoning for agricultural use, or a Williamson Act Contract?***

Impact: ***Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?***

Less-than-Significant Impact. Under the CEC Opt-In Application process, any compatible use determination would be within the CEC's jurisdiction. For purposes of evaluation significance, potential conflicts with local zoning or regulations regarding agricultural use are discussed.

The Project site is located entirely within the A-BE zoning. The Alameda County Municipal Code does not explicitly specify BESS use as an allowed or conditional use. Because BESS is an emerging technology, many municipal codes across the state are also silent on BESS as an allowed or conditional use. However, BESS projects are akin to "public utility" uses already contemplated in most jurisdictional codes. In Alameda County Municipal Code Title 17, Chapter 17.06.040(J), public utility uses are allowed with approval of a Conditional Use Permit. Further, the Alameda County Municipal Code includes provisions under Chapter 17.54.060 for uses that are of the same character as a conditional use to be found conditionally permitted. The AB 205 Opt-in Application package will be submitted to the CEC in lieu of a Conditional Use Permit with the County.

In addition, as discussed in Section 5.6.2.2, the Alameda County Planning Department Large Commercial Solar and Battery Storage Statement of Policy Components specifically allows for approval of battery storage projects within the County's LPA designated areas, which include the Project site, through a conditional use permit process. The AB 205 Opt-in Application package will be submitted to the CEC in lieu of a Conditional Use Permit with the County.

Although the Project is enrolled in a Williamson Act contract, it would not require cancellation of a Williamson Act contract. The Act determined electrical facilities to be a compatible use, absent an express finding to the contrary (CA Gov. Code § 51238(a)(1)).

Alameda County adopted Uniform Rules and Procedures for administration of lands under a Williamson Act contract. The Project would be consistent with the principles of compatibility in Alameda County's Uniform Rule 2, Compatible Uses and Development on Contracted Lands. These "principles" outlined under Section I.A of Rule 2 are as follows:

1. *The use will not significantly compromise the long-term productive agricultural capability of the contracted property or on other contracted lands in agricultural preserves (Government Code Section 51238.1).*
2. *The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the contracted property or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the contracted property may be deemed compatible if they relate directly to the production of commercial agricultural products on the contracted property or neighboring lands, including activities such as harvesting, processing, or shipping (Government Code Section 51238.1).*
3. *The use will not result in the significant removal of adjacent contracted land from agricultural use or open-space use (Government Code Section 51238.1).*
4. *The use will not result in the significant increase in the density of the temporary or permanent human population that could hinder or impair agricultural operations on the contracted property (Government Code Section 51220.5).*

As stated above, the Project site is not irrigated and is not located on prime soils (Class I or Class II, as defined by the USDA Soil Conservation Service Land Capability Classification). No Farmland of Statewide Importance or Unique Farmland (as defined by the FMMP) is present on the parcel. The entire Project site is designated as Grazing Land, which is designated to land primarily used for livestock grazing. The Project would not interfere with grazing activities on other portions of the parcel or adjacent parcels.

Per Section II.E.1 of Rule 2, the erection, construction, alteration, or maintenance of gas, electric, water, or communication utility facilities are compatible uses unless the Board of Supervisors, after notice and hearing, makes a finding to the contrary.

The Project would convert approximately 20 acres[1] of grazing land to non-agricultural uses. The Project would not obstruct agricultural uses on the remainder of the parcel and would not result in the adjoining properties converting from agricultural uses.

At the end of the facility's useful life, the Project would undergo decommissioning in accordance with an approved Decommissioning Plan. As part of the decommissioning activities, all site improvements that are no longer in use and cannot be repurposed will be removed from the Project site and the lands would be restored to a substantially similar condition in which they existed prior to construction. Grazing activities within the Project site could resume after decommissioning.

Because the Project would not conflict with existing zoning for agricultural use or with requirements for lands under a Williamson Act Contract and would not result in conversion of farmland to non-agricultural use outside of the permanent Project footprint, impacts would be less than significant.

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[1] Project includes approximately 20 acres of permanent impacts, including an approximately 17 acre project site,, approximately 2-acre alternate substation, approximately 0.15-acre turning radius road improvement, an approximately 1,325-foot-long gen-tie with a 50-foot permanent buffer (approximately 1 acre), and an existing 0.3-mile-long access road that will undergo minimal improvements (grading and gravel as needed).

5.6.3 Cumulative Effects

A cumulative impact refers to a proposed Project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed Project (Public Resources Code [PRC] Section 21083; CCR, Title 14, Section 15064[h], 15065[c], 15130, and 15355).

The CEQA Guidelines further note that:

> The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative effects can result from individually minor, but collectively significant, projects taking place over a period of time.

Cumulative land use impacts could occur if the development of the Project and other related past, present, and reasonably foreseeable probable future projects would be inconsistent with applicable plans and policies or have other cumulative land use-related impacts such as the conversion of farmland.

Cumulative projects that would have the potential to be considered in a cumulative context with the proposed Project's incremental contribution and that are included in the analysis of cumulative impacts relative to land use are shown on Figure 2-6 and discussed in Section 2.5. Cumulative projects were identified within 6 miles of the Project site and include residential, commercial, and industrial development, as well as energy projects similar to the proposed Project.

As discussed in Section 5.6.2, the proposed Project would be consistent with zoning and land use regulations; would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses; and would not convert farmland, other than the permanent Project footprint, to non-agricultural uses. Projects identified on the list of cumulative projects would be subject to the same requirements regarding zoning, land use, and protection of agricultural lands, as well as additional LORS intended to minimize or avoid significant impacts related to land use, as detailed in Section 5.6.5. Many of the projects in the cumulative list are on land zoned for agricultural use and are renewable energy or energy storage projects, which would have similar consistency with zoning and land use regulations as the proposed Project. Therefore, cumulative effects of the proposed Project and other related projects would not be significant, and no cumulative impacts would occur.

5.6.4 Mitigation Measures

Impacts associated with land use would be less than significant, and no mitigation measures are proposed.

5.6.5 Laws, Ordinances, Regulations, and Standards

This section lists and discusses the land use LORS that may apply to the Project. As discussed above, the Project site, including all Project components including BESS facility, staging area, and substation, are in unincorporated Alameda County. Zoning and land use typically are regulated at the state and local level, so no federal LORS are included. Applicable State and local plans and policies are listed in subsequent subsections.

5.6.5.1 Federal Laws, Ordinances, Regulations, and Standards

There are no federal LORS related to the proposed Project land use.

5.6.5.2 State Laws, Ordinances, Regulations, and Standards

5.6.5.2.1 Assembly Bill 205

On June 30, 2022, Governor Newsom signed into law AB 205, which expanded the CEC's jurisdiction and encourages the development of new clean energy projects. AB 205 allows developers to opt in to a streamlined environmental review and authorization process for qualifying clean energy projects, including energy storage facilities capable of storing at least 200 MWh of energy. Under AB 205, the CEC has exclusive authority over qualifying projects submitted under this certification process. CEC's siting certification is in lieu of any permit, certificate, or similar document required by any state, local, or regional agency, or federal agency to the extent permitted by federal law. It also supersedes any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law, with limited exceptions. AB 205 specifically provides that the certification does not supersede the authority of an exclusive list of agencies: the California State Lands Commission, the California Coastal Commission, the San Francisco Bay Conservation and Development Commission, the California State Water Resources Control Board or the applicable regional water quality control boards, local air quality management districts, or the California Department of Toxic Substances Control.

5.6.5.2.2 California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, commonly known as the Williamson Act, was enacted to encourage preservation of agricultural lands and encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced property taxes to create an agricultural preserve and agree to keep their land in agricultural production (or another compatible use) for at least 10 years.

The Williamson Act authorizes cities and counties to establish Farmland Security Zones within existing Agricultural Preserves and to enter into Farmland Security Zone contracts with a minimum initial term of 20 years and annual renewal similar to a Williamson Act contract. To be eligible for a Farmland Security Zone contract, the subject land must be designated on the Important Farmland Series maps as predominantly prime farmland, farmland of statewide importance, unique farmland, or farmland of local importance.

5.6.5.3 Local Laws, Ordinances, Regulations, and Standards

5.6.5.3.1 General Plan Land Use Designations

Land use provisions included in every California city and county general plan (California State Planning Law, Government Code Section 65302 et seq.) reflect the goals and policies that guide the physical development of land in their jurisdiction. This section describes the land use designations for properties in the study area. Figure 5.6-1 provides a map of general plan land use designations in the study area. A portion of the Alameda County General Plan, the ECAP, is applicable to the Project.

5.6.5.3.1.1 East County Area Plan

The ECAP designates the Project as "Large Parcel Agriculture," which is defined as follows:

> *Large Parcel Agriculture requires a minimum parcel size of 100 acres, except as provided in Programs 40 and 41. The maximum building intensity for non-residential buildings shall be .01 FAR (floor area ratio) but not less than 20,000 square feet. Where permitted, greenhouses shall have a maximum intensity of .025. One single family home per parcel is allowed provided that all*

other County standards are met for adequate road access, sewer and water facilities, building envelope location, visual protection, and public services. Residential and residential accessory buildings shall have a maximum floor space of 12,000 square feet. Additional residential units may be allowed if they are occupied by farm employees required to reside on-site. Apart from infrastructure under Policy 13, all buildings shall be located on a contiguous development envelope not to exceed 2 acres except they may be located outside the envelope if necessary for security reasons or, if structures for agricultural use, necessary for agricultural use. Subject to the provisions of the Initiative, this designation permits agricultural uses, agricultural processing facilities (for example wineries, olive presses), limited agricultural support service uses (for example animal feed facilities, silos, stables, and feed stores), secondary residential units, visitor-serving commercial facilities (by way of illustration, tasting rooms, fruit stands, bed and breakfast inns), recreational uses, public and quasi-public uses, solid waste landfills and related waste management facilities, quarries, windfarms and related facilities, utility corridors, and similar uses compatible with agriculture. Different provisions may apply in the South Livermore Valley Plan Area, or in the North Livermore Intensive Agriculture Area.

The relevant goals and policies of the ECAP are detailed in Table 5.6-3.

5.6.5.3.2 Alameda County Municipal Code, Title 17

The Alameda County Municipal Code, Title 17, details county zoning regulations. Title 17, Chapter 17.02.050 - Districts, of Alameda County's Municipal Code further refines the Alameda County General Plan and provides additional detail pertaining to allowed and conditional uses and specific development standards for the various zoning districts. Chapter 17.06 – A Districts and Chapter 17.22 – B Districts cover the zoning requirements specific to the Project site. Zoning designations for the Project site and surrounding areas are shown on Figure 5.6-2. The relevant standards of the Alameda Municipal Code are addressed in Section 5.6.2 under "Project Conformity with the Alameda County Municipal Code."

5.6.5.3.3 Alameda County Uniform Rule 2

Alameda County Uniform Rule 2 details compatible uses and development on contracted land. As detailed in Section 5.6.2.2, the Project would be consistent with the principles of compatibility in Alameda County's Uniform Rule 2 primarily because the Project would not conflict with existing zoning for agricultural use or with requirements for lands under a Williamson Act Contract and would not result in conversion of farmland to non-agricultural use outside the permanent Project footprint.

5.6.5.3.4 Climate Action Plans

The Alameda County Climate Action Plan for Government Services and Operations details a target for 50 50 percent reduction in emissions by 2030 and carbon neutrality in building operations by 2045 (Alameda County 2023a). The Alameda County Community Climate Action Plan includes battery storage among the key infrastructure measures on the topic of clean and reliable energy that are necessary to reduce emissions in the County (Alameda County 2023b).

5.6.5.3.5 Alameda County Planning Department Large Commercial Solar and Battery Storage Statement of Policy Components

The Alameda County Planning Department Large Commercial Solar and Battery Storage Statement of Policy Components specifically allows for approvals of battery storage projects within the County's LPA-designated areas through a conditional use permit process. The County has not yet updated its zoning code to reflect the Statement of Policy.

5.6.6 Agencies and Agency Contacts

Agencies and contacts are provided in Table 5.6-5.

Table 5.6-5. Agency Contacts for Land Use

Issue	Agency	Contact
Site Certification for Opt-In Project (with environmental review under CEQA and AB 52 Tribal Consultation)	California Energy Commission	Eric Knight Siting, Transmission and Environmental Protection Division Email: Eric.Knight@energy.ca.gov
Conditional Use Permit*	Alameda County Planning Division	Albert Lopez Planning Director Email: Albert.Lopez@acgov.org

Note

* Not applicable: Local approvals would be superseded by CEC approval under the Opt-in program

5.6.7 Permits and Permit Schedule

Because of the exclusive jurisdiction of the CEC, no other land use permits are required for the Project site.

5.6.8 References

Alameda County. 2000. *East County Area General Plan*. https://acgov.org/cda/planning/generalplans/documents/EastCountyAreaPlancombined.pdf.

Alameda County. 2011. Alameda County Uniform Rules and Procedures. Uniform Rule 2-Compatible Uses. https://www.acgov.org/cda/planning/landuseprojects/documents/Uniform_Rule_2_Compatible_Uses_10-11-11.pdf.

Alameda County. 2022. Large Commercial Solar and Battery Storage Statement of Policy Components (approved by BOS May 12, 2022).

Alameda County. 2023a. Alameda County Climate Action Plan for Government Services and Operations Through 2026. https://www.acgov.org/sustain/documents/2023-05AlamedaCountyClimateActionPlanforGovtServicesOperations.pdf.

Alameda County 2023b. Alameda County Community Climate Action Plan. October 2023. https://www.acgov.org/cda/planning/documents/Draft-Community-Climate-Action-Plan.pdf.

Alameda County. 2024a. Code of Ordinances. https://library.municode.com/ca/alameda/codes/code_of_ordinances.

Alameda County. 2024b. Unincorporated Alameda County Public Access Map. https://acpwa.maps.arcgis.com/apps/View/index.html?appid=4a648cb409d744b8a4f645e6e35fe773.

California Department of Conservation (DOC). 2022. California Important Farmland Finder. https://maps.conservation.ca.gov/DLRP/CIFF/.

California Department of Conservation (DOC). 2024a. Important Farmland Categories. https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx.

California Department of Conservation (DOC). 2024b. California Williamson Act Enrollment Finder. https://maps.conservation.ca.gov/dlrp/WilliamsonAct/App/index.html.

Google Earth Pro. 2024. Google Earth imagery of Alameda County. earth.google.com/web/.

ICF International (ICF). 2010. East Alameda County Conservation Strategy. Final Draft. (ICF 00906.08.) San Jose, CA. Prepared for East Alameda County Conservation Strategy Steering Committee, Livermore, CA. October. http://www.eastalco-conservation.org/documents.html.

5.7 Noise and Vibration

Section 5.7 Noise and Vibration is not included in this Application and will be submitted in second quarter 2025.

5.8 Paleontological Resources

This section presents the potential effects on paleontological resources (fossils) from the construction and operation of the proposed Viracocha Hill Battery Energy Storage System Project (Viracocha Hill BESS or Project) in the Altamont Pass in Alameda County, California. Section 5.8.1 discusses the affected environment, including the resource inventory and its results. Section 5.8.2 presents the paleontological potential of the site and assessment criteria. Section 5.8.3 presents the environmental analysis and impact assessment. Section 5.8.4 describes the cumulative effects on paleontological resources. Section 5.8.5 presents the proposed mitigation measures. Section 5.8.6 discusses applicable laws, ordinances, regulations, and standards (LORS). Section 5.8.7 lists involved agencies, Section 5.8.8 lists permits, and Section 5.8.9 provides the references consulted. Confidential fossil locality records will be submitted separately with an application for confidential designation as Appendix 5.8A.

This section of the Application for Certification meets all siting regulations of the California Energy Commission (CEC) (CEC 2000; CEC 2007) and conforms to the recommendations of the Society of Vertebrate Paleontology (SVP) (SVP 2010) that address assessing and mitigating potential impacts on paleontological resources.

5.8.1 Affected Environment

This section describes the affected environment for paleontological resources. It begins by describing the physiographic and geological context of the Project area, and then describes the nature and types of fossil resources that have been recorded in the area. It concludes with an assessment of the scientific importance of the fossils that may be encountered during the construction of the Project.

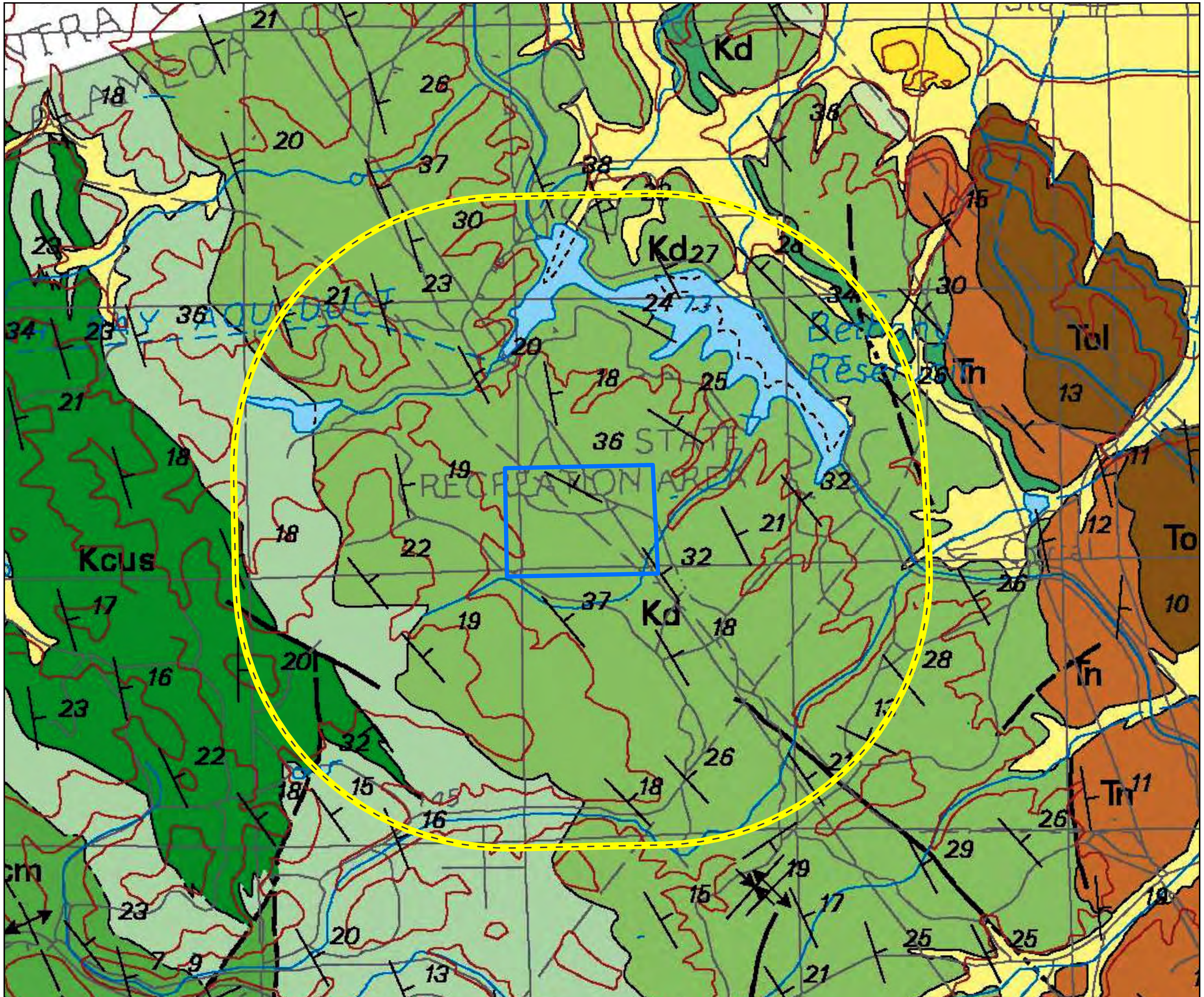
Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Fossils are important scientific and educational resources because of their use in documenting the evolutionary history of particular groups of extant and now-extinct organisms; reconstructing the environments in which those organisms lived; and in determining the relative ages of the strata in which they occur and of the geologic events that resulted in the deposition of the sediments that buried them. Fossils are considered a nonrenewable scientific resource and afforded protection under several federal, state, and local laws, ordinances, and regulations because the organisms they represent no longer exist.

5.8.1.1 Physiographic and Geologic Setting

The Viracocha Hill BESS and associated Project elements are located in the USGS Clifton Court Forebay Quadrangle within the Diablo Range of the Coast Ranges, which include the northwest-trending belt of mountain ranges, valleys, and basins that parallel the California coastline from Point Conception north to the Oregon border. Alameda County is bounded on the north by the south flank of Mount Diablo, one of the highest peaks in the Bay Area, reaching an elevation of 3,849 feet above sea level. San Francisco Bay forms the western boundary of the county; the San Joaquin Valley borders it on the east; and an arbitrary line from the Bay into the Diablo Range forms the southern boundary. Bedrock of various types and ages underlies the areas within the Diablo Range. Almost all the hills have a mantle of topsoil and weathered bedrock.

5.8.1.2 Resource Inventory Methods

To develop a baseline paleontological resources inventory of the Project study area, which includes the proposed Project footprint and a 1-mile buffer, published and available unpublished geological and paleontological literature was reviewed. Sources included geological maps, satellite photography, technical and scientific reports, and electronic databases. The potential paleontological productivity of stratigraphic units that may be affected by Project implementation then was developed through a paleontological resources records search. For this Project, Jacobs requested a paleontological records search from the Natural History Museum of Los Angeles County (NHMLA) on November 25, 2024. Additionally, a paleontological resources records review was conducted using the online database maintained by the University of California Museum of Paleontology at Berkeley (UCMP). A pedestrian field survey of the study area was conducted on [Date Pending]. The field survey was conducted to ground truth the results of the literature review and geologic mapping, and to directly evaluate the paleontological potential of the geologic units in the study area. Figure 5.8-1 presents the geology within a 1-mile radius of the site (Dibblee and Minch 2006).



Legend

Project Survey Boundary

Project Study Area 1-mile Buffer

Source:
1) ESRI Aerial Images

N

0 0.5 1
Miles

Figure 5.8-1
Geology within 1 mile of Project Site
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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5.8.1.2.1 Geological Units in the Project Area

The local geology of a project area determines its paleontological potential. The geology of the region surrounding the Project site was mapped by Dibblee and Minch (2006), who identified the geologic units underlying the Project site. The following geologic units are presented on Figure 5.8-1.

- **Younger Quaternary Alluvium (Qa, Quaternary):** Younger Quaternary Alluvium is not mapped directly within the Project site but is within the 1-mile study area. Section 5.4, Geological Hazards and Resources, notes recent (Holocene; less than ~11,700 years ago) alluvium sedimentary deposits underlie the canyon area in the Project site (Cohen et al. 2023). These deposits are generally too young to contain paleontological resources in their original context but may contain fossils eroded from nearby geologic units.
- **Older Quaternary Alluvium (Qoa, Quaternary):** Older Quaternary alluvium is not mapped at the surface within the Project site, but it is anticipated at an undetermined depth below the younger Quaternary Alluvium. It consists of desiccated alluvial fans that are difficult to differentiate from Younger Quaternary Alluvium. Jefferson (1991) reported numerous Rancholabrean North American Land Mammal Age (~11,700 to 250,000 years ago) localities from Alameda County that yielded Ice Age fossil megafaunal remains (for example, sloth, mastodon, mammoth, bear, camel, and bison) (Cohen et al. 2023).
- **Neroly Formation (Tn, Tertiary):** The Neroly Formation is not mapped directly within the Project site but is within the 1-mile study area. The Neroly Formation is a late Tertiary-age geologic unit in the San Pablo Group. A review of the UCMP online database also indicated plant fossil, microfossil, and invertebrate fossil localities within the Neroly Formation from Alameda County (UCMP 2024).
- **Panoche Formation (Kp and Kps, Cretaceous):** The Panoche Formation is a Cretaceous-age geologic unit in the San Joaquin Valley. It rests unconformably on Franciscan Formation and is conformably overlain by Moreno Formation, the upper formation of Chico Group. It consists of alternating beds of dark thin-bedded clay shale and massive gray concretionary sandstone, and it ranges from 9,500 to more than 20,000 feet thick. The formation also includes some arenaceous shale, platy sandstone, and beds of coarse conglomerate, which locally attain great thicknesses. The lowest beds here lack fossils, and may represent the Knoxville Formation (Anderson and Pack 1915). A review of the UCMP online database also indicated plant and invertebrate fossil localities from Alameda County (UCMP 2024).

5.8.1.2.2 Results of the Records Search and Literature Review

A search of the UCMP online database was performed on November 20, 2024. The UCMP database was queried for fossil site records within the potentially impacted formations.

No matches were found in the UCMP database for Quaternary alluvium deposits in Alameda County. This may in part be due to the name “Quaternary Alluvium” not being amenable to database searches; however, the depositional environment of these formations within the Project area (relatively steep mountain valleys subject to flooding) indicates that fossils are unlikely to be present within the Project area.

The UCMP database yielded two microfossil, six invertebrate, and ten plant fossil records from Neroly Formation deposits in Alameda County. The applicable fossil records from the UCMP database are provided in Confidential Appendix 5.8A. The records are primarily plants, including *Magnoliopsida*, *Pinopsida*, and *Liliopsida*. The remaining microfossil, invertebrate, and plant fossil records did not provide specimens in the database.

Queries of the UCMP database yielded two invertebrate and two plant fossil records from Panoche Formation deposits in Alameda County (shown in Confidential Appendix 5.8A). The applicable fossil records from the UCMP database are provided in Confidential Appendix 5.8A. Fossils identified from this formation include *Baculites* (nautiloids) and *Tessarolax cf. distorta* (gastropods). Plant fossil localities have also been identified in this formation.

In a study of Upper Cretaceous ammonites of California, one paleontological record was discovered approximately 2 miles south of the Project site. The "Redmont cut" of Western Pacific Railroad is in this part, where ammonites important for biostratigraphic determinations, including *Submortoniceras templetoni*, were previously reported (Packard 1916; Matsumoto, 1959).

The NHMLA paleontological resources records search results were received on December 6, 2024. The NHMLA did not report any fossil localities from within the Project site, but they do report nearby localities from deposits similar to those underlying the site on the surface and at depth (Confidential Appendix 5.8A).

5.8.1.2.3 Results of the Field Survey

A preconstruction survey was conducted in January 2025. The survey included the study area and available areas outside the study area that could provide information relevant to paleontological resources in the Project area. This survey was primarily focused on archaeological resources but included staff cross-trained in paleontological resources monitoring. Site photos were made available, and the archaeologists communicated their results with the Paleontological Resource Specialist (PRS).

The study area is covered by vegetation and in areas has been locally re-worked by previous construction. Field staff focused on those areas where information about the subsurface could be identified. These areas included stream banks, road cuts, former excavation sites, and animal burrows.

No fossils were identified during the field survey.

The hills within the study area are underlain by the Panoche Formation of the Great Valley Sequence. Observed sediment consisted of light gray to light brown sand, and piles of concretions were identified near areas where excavations occurred. Based on site photos, it appears that the surface layer of material has been disaggregated by meteorological and biological processes to an unknown depth.

Alluvium within the study area is found in the valleys and streams between the hills. It is composed of the same light gray to light brown sand seen in the hills of the study area, which provide the source material for the alluvial sediment. This indicates that fossils may be present in the alluvium within the study area, eroded from the Panoche Formation.

5.8.2 Paleontological Potential

The paleontological potential of a geologic unit exposed in a project area is inferred from the abundance of fossil specimens and previously recorded fossil sites in exposures of the unit, or of similar units in similar geological settings. The underlying assumption of this assessment method is that a geologic unit is most likely to yield fossil remains in a quantity and of a quality similar to those previously recorded from the unit elsewhere in the region. The paleontological potential of a geologic unit reflects (1) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant vertebrate, invertebrate, plant, or trace fossils, and (2) the importance of recovered evidence for proper stratigraphic interpretation, age determination of a geologic unit, paleoenvironmental and paleoclimatic reconstructions, or to understanding evolutionary processes.

Significant paleontological resources are fossils and fossiliferous deposits consisting of identifiable vertebrate fossils; uncommon invertebrate, plant, and trace fossils; and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and biochronologic information. Paleontological resources are considered to be older than recorded human history and older than middle Holocene (older than approximately 5,000 radiocarbon years) (SVP 2010).

Determining the paleontological potential of a geologic unit helps to determine which units may require mitigation to reduce potential impacts on paleontological resources during the development of the Project. In its guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (2010) established the following four categories of paleontological potential of geologic units: high, low, none, and undetermined. These categories are described in more detail in Table 5.8-1.

Table 5.8-1. Definitions of Paleontological Potential

Rating	Definition
High	Geologic units from which vertebrate or scientifically important invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional scientifically important paleontological resources. Geologic units that contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and geologic units which may contain new vertebrate deposits, traces, or trackways, also are classified as having high potential.
Low	Geologic units with low potential are known to produce significant fossils only on rare occasions, and only preserve fossils in rare circumstances such that the presence of fossils is the exception not the rule for(example, basalt flows or recent colluvium).
Undetermined	Geologic units for which little information is available concerning their geologic context (depositional environment, age) and potential to contain paleontological resources are considered to have undetermined potential. The paucity of data is usually from a lack of study in that unit or because of high variability in the unit's lithology. Typically, further study is necessary to determine whether these units have high, low, or no potential to contain scientifically significant paleontological resources. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
None	Geologic units with no potential are those that formed at high temperatures and pressures, deep within the Earth, such as plutonic igneous rocks and high-grade metamorphic rocks. Because the environment in which these rocks formed is not conducive to the preservation of biological remains, they do not contain fossils. Human-made fill also is considered to possess no paleontological potential.

5.8.2.1 Paleontological Resource Significance Criteria

California Environmental Quality Act (CEQA) Appendix G provides that a significant effect may occur if a project has the potential to "directly or indirectly destroy a unique paleontological resource or site or unique geologic feature" (CEQA Appendix G, Section V.c.). This is most typically thought of as occurring from heavy equipment damage to fossils, but also may occur when fossils are looted, improperly removed from the surrounding sediment, or otherwise lost to the scientific world. Fossils are a nonrenewable resource (SVP 2010).

Generally, the probability of adverse impacts during excavations within a geologic unit is proportionate to the paleontological potential of the unit. Although it is theoretically possible to adversely affect paleontological resources in geologic units with low potential, it would be remote because the units are not known to contain fossils. The highest probability of significant adverse effects to paleontological resources results from disturbance of geologic units with high potential, which have produced scientifically significant fossils, and recorded fossil localities are sufficiently frequent to anticipate encountering more (SVP 2010).

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the SVP (2010) notes that an individual fossil specimen is considered scientifically important and significant if it meets any of the following criteria:

- Identifiable
- Complete
- Well preserved
- Age-diagnostic
- Useful in paleoenvironmental reconstruction
- A member of a rare species

- A species that is part of a diverse assemblage
- A skeletal element different from, or a specimen more complete than, those now available for that species

For example, identifiable land mammal or terrestrial plant fossils are considered scientifically important because of their potential use in determining the age and paleoenvironment of the sediments in which they occur. Moreover, vertebrate and plant remains are comparatively rare in the fossil record. Fossil plants are particularly important in this regard and, as sessile (anchored in place) organisms, are actually more sensitive indicators of their paleoenvironment and are therefore more important than mobile mammals for paleoenvironmental reconstructions.

For marine and shoreline sediments, invertebrate mega-fossils (mollusks and cephalopods) are scientifically important for the same reasons that land mammal and land plant fossils are valuable in terrestrial deposits. Marine microfossils such as foraminifera or radiolaria are much more common, and consequently they are usually not considered for resource protection because of their relative abundance. The value or importance of different fossil groups varies depending on the age and depositional environment of the stratigraphic unit that contains the fossils, their abundance in the record, and their degree of preservation.

Using these criteria and the categories of paleontological potential previously provided, the significance of potentially adverse impacts of earth moving associated with implementation of this Project on paleontological resources was assessed. Any unmitigated impact on a fossil site, or on a fossil-bearing rock unit with high paleontological potential, would be considered significant.

5.8.3 Environmental Analysis

The Project study area is immediately underlain by Panoche Formation sediments. The environmental effects on paleontological resources from construction and operation of the Project are presented in the following subsections.

5.8.3.1 Paleontological Resource Impact Assessment

The significance of impacts of Project-related activities on the paleontological resources of each stratigraphic unit found within the Project study area (including those that may be encountered at depth) is presented in this section. Construction activities involving ground disturbance that include grading, trenching, and excavation operations will impact Panoche sediments. Deeper excavation activities and drilling operations have the potential to not only penetrate Panoche sediments, but also older and more deeply buried geologic deposits.

Table 5.8-2 presents the paleontological potential of the geologic units that may be affected during ground-disturbing activities for the Project. Because no ground disturbance is anticipated during the operation or the maintenance phase of the Project, no impacts on paleontological resources are expected during that phase.

Table 5.8-2. Paleontological Potential of Geologic Units

Geologic Unit	Geologic Map Abbreviation	Types of Fossils	Paleontological Potential
Younger Quaternary alluvium	Qa	NA	Low, but may contain fossils from higher formations
Older Quaternary alluvium	Not mapped at the surface within the study area, but present at unknown depth beneath unit Qa	Invertebrates, Vertebrates, Plants, Microfossils	High
Neroly Formation	Tn	Invertebrates, Vertebrates, Plants	High
Panoche Formation	Kp, Kps	Invertebrates, Plants, Microfossils	Low

5.8.4 Cumulative Effects

The environmental analysis details the Project's cumulative impacts, which would be limited to the geographic scope of the potential cumulative paleontological resources impacts caused by ground-disturbing activities in the immediate vicinity that would occur during Project construction. Cumulative projects are identified in Section 2.5 of the Project Description. All planned projects in the vicinity of the proposed Project are subject to environmental review and would be required to comply with local, state, and federal laws. Additionally, with implementation of mitigation measures and other grading and building requirements, the proposed Project would not contribute to negative cumulative impacts for paleontological resources because the proposed Project and other cumulative projects in the area would be required to demonstrate compliance with local, state, and federal laws, ordinances, and regulations. As a result, cumulative impacts related to paleontological resources would not be cumulatively considerable.

5.8.5 Mitigation Measures

Typical mitigation measures proposed in this section comply with CEC environmental guidelines (CEC 2000; CEC 2007) and conform to SVP standard guidelines for mitigating adverse construction-related impacts on paleontological resources (SVP 2010).

Typical mitigation measures would include the following:

- **Establish PRS for Project:** The Project owner shall provide resume and qualifications of its PRS for review. If the PRS is replaced before completion of Project mitigation and submittal of the Paleontological Resources Report (PRR), the Project owner shall notify the Lead Agency of the replacement PRS. The Project owner shall ensure that the PRS and Paleontological Resources Monitors (PRMs) monitor, consistent with the Paleontological Resources Monitoring and Mitigation Plan (PRMMP), all construction-related grading, excavation, trenching, and auguring in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the Project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the Project owner shall notify and seek the concurrence of the CPM.
- **PRMMP:** The Project owner shall ensure that the PRS prepares a PRMMP and submits the PRMMP to the Lead Agency for review and approval. Approval of the PRMMP by the Lead Agency shall occur before any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities, and may be modified with CPM approval. The PRMMP shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall include all updates and reside with the PRS, each PRM, the Project owner's onsite manager, and the Lead Agency.
- **Worker Environmental Awareness Program:** Before ground disturbance the Project owner and the PRS shall prepare a Lead-Agency-approved WEAP.
- **Paleontological Resources Report:** The Project owner shall ensure preparation of a PRR by the designated PRS. The PRR shall be prepared following completion of ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and shall be submitted to the Lead Agency for approval.

5.8.6 Laws, Ordinances, Regulations, and Standards

Paleontological resources are the mineralized (fossilized) remains of prehistoric plants and animals and the mineralized impressions (trace fossils) left as indirect evidence of the form and activity of such organisms. These resources are located within geologic units and considered to be nonrenewable. Thus, they are afforded protection under several federal, state, and local LORS. Table 5.8-3 presents the LORS applicable to paleontological resources.

Table 5.8-3. LORS Applicable to Paleontological Resources

LORS	Applicability	Opt-In Application Reference	Project Conformity
CEQA, Appendix G	Applicable – Requires assessment of the potential to affect paleontological resources during earth-moving activities.	Sections 5.8.2, 5.8.3, and 5.8.5	Yes
Public Resources Code, Sections 5097.5/5097.9	Applies to paleontological resources on land owned by, or in the jurisdiction of, the state of California, or any city, county, district, authority, or public corporation, or any agency thereof. Not applicable to this Project because it is entirely on private property.	Section 5.8.5	Yes
East County Area Plan, Cultural Element	Applicable policies and programs that are intended to address cultural including archaeological resources in the East County area.	Section 5.8.5	Yes

5.8.6.1 Federal LORS

Federal protection for significant paleontological resources would apply to the Project only if any construction or other related Project impacts occur on federally owned or managed lands, or if a federal entitlement or other permit were required. Because the Project site is not located on federally owned or managed lands, it is not subject to federal LORS related to paleontological resources.

5.8.6.2 State LORS

The CEC environmental review process under the Warren-Alquist Act is considered functionally equivalent to that of CEQA (Public Resources Code [PRC] Sections 21000 et seq.). CEQA requires that public agencies and private interests identify the environmental consequences of their proposed projects on any object or site of significance to the scientific annals of California (Division I, California PRC: 5020.1 [b]). The CEQA Guidelines (PRC Sections 15000 et seq.) define procedures that public agencies are required to implement to comply with CEQA. Appendix G in Section 15023 provides an Environmental Checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts. One of the questions to be answered in the Environmental Checklist (Section 15023, Appendix G, Section VII, Part f) is "Would the project directly or indirectly destroy a unique paleontological resource or site…?"

The CEQA lead agency having jurisdiction over a project is responsible for ensuring that paleontological resources are protected in compliance with CEQA and other applicable statutes. The lead agency with the responsibility to ensure that fossils are protected during construction of the Project is the CEC. PRC Section 21081.6, entitled Mitigation Monitoring Compliance and Reporting, requires that the CEQA lead agency demonstrate project compliance with mitigation measures developed during the environmental impact review process.

Other state requirements for paleontological resource management are in California PRC Sections 5097.5 and 5097.9, Archaeological, Paleontological, and Historical Sites. This statute protects historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological sites, or any other archaeological, paleontological, or historical feature that is situated on land owned by, or in the jurisdiction of, the state of California, or any city, county, district, authority, or public corporation, or any agency thereof. PRC Sections 5097.5 and 5097.9 do not apply to the Project because it lies entirely on private property.

5.8.6.3 Local LORS

The East County Area Plan - General Plan serves as the primary policy statement by the Alameda County Board of Supervisors for implementing development policies and land uses. The following elements of the General Plan may apply to paleontological resources.

- **Policy 127**. The County shall identify and preserve significant archeological and historical resources, including structures and sites that contribute to the heritage of the East County.
- **Proposed Modification to Policy 128**. The County shall require development to be designed to avoid cultural resources or, if avoidance is determined by the County to be infeasible, to implement appropriate mitigation measures that offset the impacts.
- **Proposed Modification to Program 57**. If the Project is located within an extreme or high archeological sensitivity zone as determined by the County, a background and records check of the site shall be required. If there is evidence of an archaeological site within a proposed project area, an archeological survey by qualified professionals shall be required as a part of the environmental assessment process. If any archeological sites are found during construction, all work in the immediate vicinity shall be suspended pending site investigation by a qualified archaeology professional. Proposed structures or roads on property that contains archaeological sites should be sited in consultation with a professional archaeologist to avoid damaging the archaeological sites. The County shall follow Appendix K of the CEQA Guidelines for cultural resource preservation procedures in reviewing development projects located near identified cultural resources. Appropriate measures for preserving an historic structure include renovation or moving it to another location. Proposals to remove historic structures shall be reviewed by qualified professionals.

The Project would achieve these objectives with the implementation of the mitigation measures specified in Section 5.8.5.

5.8.6.4 Professional Standards

The SVP, an international organization of professional paleontologists, has established guidelines and standard procedures that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation (SVP 2010). This assessment was prepared in accordance with these guidelines.

5.8.7 Agencies and Agency Contacts

There are no agencies with blanket jurisdiction over paleontological resources. The CEC is the lead agency for, and has jurisdiction over, paleontological resources for this Project. If encountered, any scientifically significant fossil specimens and associated site records would be submitted to an accredited repository, such as the UCMP. Table 5.8-4 presents the agency contacts for the UCMP.

Table 5.8-4. Agency Contacts for Paleontological Resources

Issue	Agency	Contact
Paleontological Resources Documentation and Specimen Repository	UCMP	Charles Marshall, Museum of Paleontology University of California 1101 Valley Life Sciences Building Berkeley, CA 94720-4780 Voice: 510.642.1821 Fax: 510.642.1822 Email: ucmpwebmaster@berkeley.edu

5.8.8 Permits and Permit Schedule

No state or county agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on this Project site.

5.8.9 References

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5.9 Public Health

Section 5.9 Public Health is not included in this Application and will be submitted in second quarter 2025.

5.10 Socioeconomics

Section 5.10 Socioeconomics is not included in this Application and will be submitted in second quarter 2025.

5.11 Soils and Agricultural Resources

This section describes the potential effects of the construction and operation of the Viracocha Hill Battery Energy Storage System (Viracocha Hill BESS or Project) on soil resources and agriculture and is organized as follows: Section 5.11.1 describes the existing environment, including soil types and their use. Section 5.11.2 presents the environmental analysis for the Project. Section 5.11.3 discusses cumulative effects. Section 5.11.4 presents mitigation measures. Section 5.11.5 presents the laws, ordinances, regulations, and standards (LORS) applicable to soils and their use. Section 5.11.6 provides agency contacts for all involved agencies. Section 5.11.7 describes soil-related permits required for the Project. Section 5.11.8 provides the references that were used to develop this section.

5.11.1 Affected Environment

The Applicant proposes to construct, own, and operate the up to 362.8-MW-hr Viracocha Hill BESS in Alameda County, California, adjacent to the proposed Sand Hill Wind Repower Project (to be constructed, owned, and operated by the Applicant). The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

5.11.1.1 Regional Setting

Alameda County, located in the San Francisco Bay Area, encompasses a diverse range of landscapes and climates. The county spans 738 square miles, with more than 200,000 acres designated for agricultural purposes, primarily in the Tri-Valley region of Eastern Alameda County. The region benefits from a Mediterranean climate, characterized by wet, mild winters and dry, warm summers, which is conducive to a variety of agricultural activities.

Agriculture in Alameda County is supported by several environmental and cultural factors, including fertile soils, a favorable climate, and a well-established infrastructure for water delivery and management. The county's agricultural production is diverse, featuring vineyards, orchards, and row crops. Wine grape production is particularly significant, benefiting from the region's favorable growing conditions. Other crops include vegetables, fruits, nuts, and livestock feed.

Although agriculture is prevalent within Alameda County, land within and surrounding the Project site is not used for agricultural purposes. Existing land use at the Project site is undeveloped grazing land surrounded by an operating wind power generation facility.

5.11.1.2 Affected Soils

Soil types in the vicinity of the Project site are described and mapped based on the interpretation of Soil Surveys of the Alameda area published by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). One soil-mapping unit, Altamont rocky clay (map unit ArD), moderately deep, overlaps and will be potentially affected by the construction of the Project. San Ysidro loam (map unit Sa), located north of the Project boundary, does not overlap the Project. This soil is moderately well-drained, with a water transmission capacity ranging from moderately low to moderately high. Soil mapping units in the vicinity of the Project are shown in Figure 5.11-1.

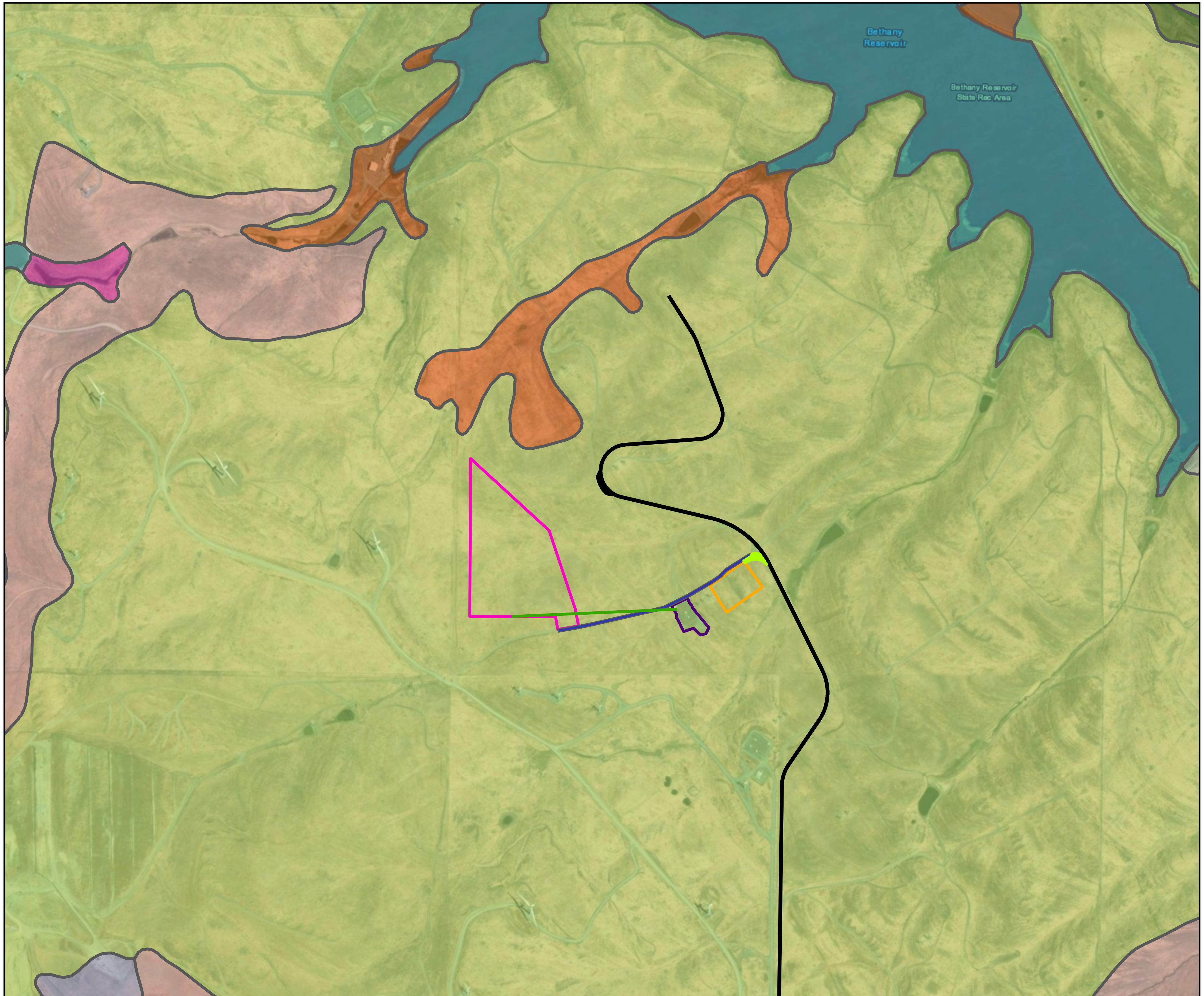
The soil type found at the Project site, Altamont rocky clay, moderately deep, is a well-drained soil with very low water movement in the most restrictive layer. This soil type is susceptible to low water erosion and moderate wind erosion. This soil type is neither flooded nor ponded. These soils are all generally composed of a significant amount of clay particles, which can expand (absorb water) or contract (release water). These shrink and swell characteristics can result in structural stress. Table 5.11-1 provides a summary of soil characteristics associated with the soil mapping unit in the Project area including slope, depth to bedrock, wind and water erosion factors, and soil unit description.

Table 5.11-1. NRCS Soil Map Unit Descriptions and Characteristics

Map Unit	Description
ArD	Altamont rocky clay, moderately deep, 7 to 30 percent slopes ▪ Slope: 7-30% ▪ Depth of Bedrock (inches): 18-36 ▪ Drainage class: Well drained ▪ Runoff class: High ▪ Water (k_{sat} factor): Very low (0.00 inches per hour) ▪ Wind Erosion: Moderate ▪ Depth to water table: More than 80 inches ▪ Frequency of flooding: None ▪ Frequency of ponding: None ▪ Hydrologic Soil Group: D ▪ Ecological site: Clayey Hills (R015XD137CA) ▪ Hydric soil rating: No ▪ Farmland classification: Not prime farmland ▪ Unit Description: Gently sloping, deep, well-drained, high runoff soil formed in material weathered from fine-grained sandstone and shale. The non-hydric soil has no frequency of flooding or ponding with a depth to water table of over 80 inches. The typical profile of this soil type is 28 to 32 inches to weathered bedrock and 18 to 36 inches to paralithic bedrock.

Note:

Soil characteristics are based on soil descriptions available on the NRCS Web Soil Survey (accessed November 2024) and NRCS Official Soil Series Descriptions (accessed 2024). Soil descriptions provided in this table are limited to those soil units that could be directly affected by the Project.



Legend

- Proposed 230-kV Gen-Tie
- Proposed Access Road Widening Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)

Soil Map Unit and Description

- AaC - Altamont clay, 3 to 15 percent slopes
- AaD - Altamont clay, 15 to 30 percent slopes, MLRA 15
- AmF2 - Altamont clay, moderately deep, 45 to 75 percent slopes, eroded
- ArD - Altamont rocky clay, moderately deep, 7 to 30 percent slopes
- Pd - Pescadero clay loam, 0 to 6 percent slopes, MLRA 14
- RdB - Rincon clay loam, 3 to 7 percent slopes
- Sa - San Ysidro loam, 0 to 2 percent slopes, MLRA 14
- W - Water

Source:
1) ESRI Aerial Images

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Fig 5.11-1
NRCS Soil Map Units
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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5.11.1.3 NRCS Soil Map Units

Table 5.11-1 describes the properties of the NRCS soil map unit found at the Project site. The soil map unit is discussed briefly in the following section.

As shown on Figure 5.11-1, one mapping unit, Altamont rocky clay, moderately deep, 7 to 30 percent slopes, is associated with the Project area. This deep, well-drained, high runoff soil, with slow permeability forms on gently sloping uplands within the Project area. The representative soil profile is greater than 65 inches. The surface texture of this soil type is clay. This soil has a low susceptibility to water erosion and moderate susceptibility to wind erosion. The soil's permeability is slow. The non-hydric soil has no frequency of flooding or ponding and has a depth to water table of more than 80 inches. This soil unit may be limited for traditional building development because of the soil's high shrink-swell potential and will require appropriate building foundation design.

The entire Project is underlain by this soil-mapping unit.

5.11.1.4 Agricultural Use

Existing land use at the Project site is undeveloped grazing land surrounded by an operating wind power generation facility. No portion of the Project area is used for agriculture. The Project parcel is enrolled in a Williamson Act contract and does not meet any of the criteria for classification as Prime Agricultural Land.

5.11.1.4.1 Important Farmland

Important farmland areas are assessed using the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP) Soil Candidate Listings for Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. These four categories are collectively described as "Important Farmland."

Based on a review of Soil Candidate Listings for Important Farmland in Alameda County (FMMP 2024), no soil-mapping units in the Project area meet the criteria for Important Farmland. The FMMP delineates the entire Project area as Grazing Land, land on which the existing vegetation is suited to the grazing of livestock. Important Farmland designations in the Project vicinity are shown on Figure 5.6-3.

5.11.1.5 Wetlands

No aquatic resources are mapped in the Project area, and an aquatic resources field survey of the Project is scheduled to occur in spring 2025. Detailed information regarding wetlands is included in Section 5.2, Biological Resources.

5.11.2 Environmental Analysis

The potential environmental impacts of the Project with respect to soil and agricultural resources are primarily related to the construction and operation of the Project components. The potential environmental impacts related to soils are presented in Section 5.11.2.2. The potential environmental impacts related to agricultural resources are presented in Section 5.11.2.3.

5.11.2.1 Significance Criteria

Appendix G of California Environmental Quality Act (CEQA) identifies the following criteria for determining significance of impacts on soil resources:

- Whether the Project results in substantial soil erosion or loss of topsoil, degradation of soils or farmland, changes in topography, or unstable soil conditions.

- Whether the Project is located on a soil that is unstable, or that would become unstable as a result of the Project, and potentially result in landslide, lateral spreading, subsidence, liquefaction, or collapse. (This criterion is evaluated in Section 5.4, Geological Hazards).
- Whether the Project is located on expansive soil, as defined in Table 18-1 of the Uniform Building Code (International Conference of Building Officials 1994), creating substantial risks to life or property. (This criterion is evaluated in Section 5.4, Geological Hazards).
- Whether the Project would place septic tanks or alternative wastewater disposal systems on soils incapable of adequately supporting these systems where sewer is not available for the disposal of wastewater.

The assessment of potential impacts on soil resources is based on soils information presented in the published NRCS soil survey information covering the Project area and consideration of the Applicant's committed mitigation measures. Project area soil conditions include grazing areas with gently sloped topography. The use of erosion control best management practices (BMPs) to control water and wind erosion during construction activities and the placement of impervious surfaces and BMPs on disturbed areas within the Project site will be implemented to effectively control soil loss during and after construction. Consequently, quantitative calculations of potential soil loss using the Universal Soil Loss and Chepil Wind Erosion Equations, which are typically used to quantify water and wind-induced soil loss for agricultural operations, were not evaluated. Potential impacts of the proposed Project on soil resources are evaluated based on those caused by construction activities and those related to facility operation.

5.11.2.2 Impacts on Soils

This section presents the direct and indirect impacts on soil resources and proposed mitigation measures. Impacts analysis related to both construction and operation are provided for each element, along with proposed mitigation measures deemed necessary to reduce impacts to less-than-significant levels.

5.11.2.2.1 Project Site

5.11.2.2.1.1 Construction-Related Impacts

Construction-related impacts on soil resources associated with the Project primarily involve vegetation removal, excavation, grading, and temporary stockpiling. One soil unit type, Altamont rocky clay, moderately deep, 7 to 30 percent slopes, may be impacted during construction at the Project site as shown on Figure 5.11-1. A Phase 1 Environmental Site Assessment (ESA) conducted in the Project area in December 2024 did not identify potential sources of contamination in the Project soils (see Appendix 5.14A).

The existing site topography is gently sloped, and some cut and fill may be required to provide a level area for the facility. During construction, approximately 17 acres will be disturbed during grading activities. Approximately 52,794 cubic yards of cut will be required, and approximately 52,189 cubic yards of fill will be required. Laydown areas are located within the approximately 17-acre project site and will be initially graded during early construction activities. This information is preliminary and subject to refinement as the Project design progresses.

Excavation work will consist of the removal, storage, and disposal of earth, sand, gravel, vegetation, organic and deleterious material, loose rock, boulders, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stored in stockpiles at designated locations using proper erosion protection methods. If required, excess materials will be removed from the site and disposed of at an acceptable location. Typical cut-and-fill depths of less than 20 to 30 feet are anticipated. Areas to be backfilled will be prepared by removing unsuitable materials and rocks. The bottom of the excavations will be examined for loose or soft areas. Such areas will be excavated fully and backfilled with compacted fill.

Ground improvement operations to mitigate the site for settlement-sensitive improvements are discussed in Section 5.4, Geological Hazards.

Impacts during construction of the Project may include alteration of the existing soil profile, increased soil erosion, and soil compaction. Alteration of the existing soil profile, including mixing of soils and rock, will alter the physical, chemical and biological characteristics of the native soils and underlying geology. Clearing the protective vegetative cover and subsequent soil disturbance will likely result in an increase of short-term water and wind erosion rates. The loss of topsoil can increase the sediment load in surface receiving waters downstream of the construction site. Soil compaction can decrease infiltration rates, resulting in increased runoff and erosion rates. The topography and implementation of BMPs in the Project area will limit soil erosion to minor impacts. The mitigation measures outlined in Section 5.11.4 and recommendations in the geotechnical report provided as Appendix 5.4A would further reduce impacts on soil resources resulting from construction. These impacts are considered to be less than significant.

BMPs will be implemented during construction in accordance with the site-specific stormwater pollution prevention plan (SWPPP) that is required under the Clean Water Act (CWA) for all construction Projects larger than 1 acre. The California Energy Commission (CEC) also requires the Applicant to develop and implement a drainage, erosion, and sediment control plan (DESCP) to reduce the impact of runoff from construction sites. Monitoring will involve inspections to ensure that the BMPs are properly implemented and effective. Temporary work areas will be restored to preconstruction condition; therefore, impacts from soil erosion via water are expected to be less than significant.

The clay-type soils at the Project site have a potential for moderate wind erosion. Soil BMPs will be implemented throughout construction. Wind erosion potential is highest when dry, fine sandy, or silty material is left exposed. The compaction of site soils is expected to reduce the overall potential for wind erosion. Soil stockpiles will be covered if they are not active prior to precipitation events, protected with a temporary sediment barrier during the rainy season, and located away from stormwater and drainage collection areas. Regular watering of exposed soils and the establishment of short- and long-term erosion control measures will be used to further reduce soil loss attributable to erosion. For these reasons, impacts from soil erosion via wind are expected to be less than significant.

5.11.2.2.1.2 Operation-Related Impacts

During operation, the Project will be surrounded by appropriate BMPs, in accordance with county, state, and federal regulations. No grading, excavation, or significant soil movement that would cause substantial soil erosion or loss of topsoil are anticipated during operation of the site. Therefore, no impacts on soil resources are anticipated from operations at the Project site.

The Project will not be equipped with a septic system. Therefore, the Project will not cause soil impacts associated with septic systems.

5.11.2.2.2 Gen-tie Line

5.11.2.2.2.1 Construction-Related Impacts

Construction-related impacts associated with the construction of an approximately 1,325 foot-long gen-tie line from the Project site to the Ralph Substation primarily involve access road construction, corridor and worksite clearing, foundation installation, structure assembly and erection, pulling, tensioning, splicing, installation of ground wires, conductors, counterpoise/ground rods, cleanup, and site reclamation. The work areas would be cleared of vegetation only to the extent necessary. After line construction, all pads not needed for normal gen-tie line maintenance would be restored to natural contours to the greatest extent possible and revegetated where required.

Existing unpaved roads and previously disturbed areas will be used during construction to the maximum extent practical within the gen-tie line corridor. Following construction, disturbed road sections will be restored to their original contours. Some permanent road improvements may be left in place where necessary for operation and maintenance, or where the landowner or land managing agency requests. All existing roads will be left in a condition equal to or better than their condition prior to the construction of the gen-tie line.

Potential impacts during construction of the proposed gen-tie line on soil resources will be similar to those identified earlier and include alteration of the existing soil profile, soil erosion, and soil compaction. Construction of the gen-tie line would result in soil impacts because of excavation and vehicle traffic caused during stringing activities. Increased soil compaction may decrease the ability of vegetation to reestablish itself within the corridor following disturbance, which also may result in increased erosion. These impacts would be localized and limited to the disturbed areas in the existing corridors. The mitigation measures outlined in Section 5.11.4 and recommendations in the geotechnical report would reduce impacts on soil resources resulting from the construction of the gen-tie line to less-than-significant levels.

5.11.2.2.2.2 Operation-Related Impacts

During operation, an approximately 50-foot-wide permanent corridor will be maintained along the length of the gen-tie and will be maintained and monitored for signs of increased erosion and potential scour. Maintenance vehicle traffic will travel on existing access roads to monitor and maintain the pole site locations. The erosion control and post-construction monitoring mitigation measures outlined in Section 5.11.4 would reduce impacts on soil resources from gen-tie line operations to less-than-significant levels.

5.11.2.2.3 Alternative Substation Area and Access Road

5.11.2.2.3.1 Construction-Related Impacts

Construction-related impacts on soil resources in the Alternative Substation Area (ASA) and its access road are similar to those in the Project area. These impacts include vegetation removal, excavation, grading, and temporary stockpiling. One soil type, Altamont rocky clay (moderately deep, 7 to 30 percent slopes), may be affected during ASA construction, as shown on Figure 5.11-1.

Excavation work for the project will involve removing various materials, such as earth, sand, gravel, vegetation, and debris, to prepare the site for construction. Suitable materials will be stored for backfill, while excess materials will be disposed of offsite. The excavation process includes examining and preparing the bottom, removing unsuitable materials, and backfilling with compacted fill. Ground improvement operations to mitigate the site for settlement-sensitive improvements are discussed in Section 5.4, Geological Hazards.

Construction impacts may include soil profile alteration, increased erosion, and compaction. These changes can affect the physical, chemical, and biological characteristics of the soil. Clearing vegetation and disturbing the soil can lead to increased erosion rates, both from water and wind. However, the implementation of BMPs and mitigation measures outlined in the geotechnical report will help limit these impacts to minor levels. The site topography and BMPs will further reduce soil erosion.

BMPs will be implemented according to a site-specific SWPPP and a DESCP to manage runoff impacts. Monitoring will ensure the effectiveness of these measures, and temporary work areas will be restored to their preconstruction conditions. The clay-type soils at the site have moderate wind erosion potential; however, measures such as covering stockpiles and regular watering will minimize erosion. Overall, impacts from soil erosion via water and wind are expected to be less than significant.

5.11.2.2.3.2 Operation-Related Impacts

During operation, the ASA will be surrounded by appropriate BMPs, in accordance with county, state, and federal regulations. No grading, excavation, or significant soil movement that would cause substantial soil erosion or loss of topsoil are anticipated during operation of the site. Therefore, no impacts on soil resources are anticipated from operations at the ASA.

5.11.2.3 Agricultural Resources

Appendix G of CEQA guidelines identifies the following criteria for determining the significance of impacts on agricultural resources:

- Whether the Project converts Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance, as shown on maps prepared pursuant to the FMMP, to nonagricultural uses.
- Whether the Project conflicts with existing zoning for agricultural use or a Williamson Act contract.
- Whether the Project involves other changes in the existing environment that, because of their location or nature, could result in the conversion of farmland to nonagricultural use.

The following sections evaluate potential Project impacts on agriculture and important farmland based upon the preceding criteria.

5.11.2.3.1 Conversion of Important Farmland to Nonagricultural Use

The FMMP utilizes the following four farmland classifications to describe Important Farmland: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. Based on a review of Soil Candidate Listings for Important Farmland in Alameda County (FMMP 2024), no soil-mapping units in the Project area meet the criteria for Important Farmland. The FMMP delineates the entire Project area as Grazing Land, land on which the existing vegetation is suited to the grazing of livestock. As a result, there will be no conversion of Important Farmland due to the Project development, and no significant impacts on Important Farmland will occur.

5.11.2.3.2 Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract

The Project parcel is enrolled in a Williamson Act contract but does not meet any of the criteria for classification as Prime Agricultural Land. Additionally, no FMMP Important Farmland is found within the Project area. Therefore, the development of the proposed Project does not represent a significant impact on agricultural resources.

5.11.2.3.3 Potential Changes to the Existing Environment Which, Because of Their Location or Nature, Could Result in the Conversion of Farmland to a Nonagricultural Use

Operation of the Viracocha Hill BESS will expose soils and vegetation near the plant facility to slightly increased levels of air pollutants during routine testing and emergency use; however, the emissions would be infrequent and minimal, as discussed in Section 5.1, Air Quality. These emissions will not adversely impact plant habitats. Based on the type of emissions, the short residency time of the surrounding vegetation, and the measures identified in Section 5.1, impacts on the soil vegetation system from the Project BESS facility emissions are expected to be insignificant, and conversion of farmland is not anticipated.

5.11.3 Cumulative Effects

A proposed Project may have a cumulative impact when the incremental effect of the Project is considerable when viewed in connection with other past, present, and reasonably foreseeable future projects (Public Resources Code [PRC] Section 21083; California Code of Regulations [CCR], Title 14, Sections 15064[h], 15065[c], 15130, and 15355). Fifteen potential projects were identified and considered in this cumulative impact assessment and are identified in Section 2.5 of the Project Description and shown in Figure 2-6.

None of these projects identified within the geographic scope of potential cumulative impacts would intersect or be additive to the Project's site-specific soil impacts; therefore, no cumulative effects are identified for soils. In general, soil impacts are site-specific and limited to the boundaries of each individual Project rather than cumulative in nature. With the implementation of measures to control erosion and sedimentation, including good construction practices and the mitigation measures described in Section 5.11.4, the Project impacts would be less than significant.

Appropriate BMPs at the Project site will prevent stormwater runoff from leaving the site, thereby avoiding potential downstream erosion and sedimentation. Other projects in the area would be required to comply with the same regulatory programs (such as National Pollution Discharge Elimination System [NPDES] permits, grading ordinances), and would be expected to control erosion under these regulations. Thus, the cumulative soil impacts in the general area would be expected to be less than significant.

As discussed in Section 5.11.2.3, Agricultural Resources, implementation of the Project would not result in the conversion of any Important Farmland, as defined by the FMMP. Therefore, no cumulative impacts on agricultural resources are anticipated.

The Project will not have a significant effect on soils or agriculture with the implementation of the mitigation measures identified in Section 5.11.4 and design measures recommended in the geotechnical report. The Project is surrounded by an operating wind power generation facility and is located only 0.25 mile from the Project's proposed point of interconnection, Ralph Substation. Given the requirements of the permitting and construction compliance processes that the Project and other approved projects must go through, it is very unlikely that these or other projects would have adverse impacts on soil or agricultural resources that, combined with those of the Project, would reach the level of significance.

5.11.4 Mitigation Measures

5.11.4.1 Soil Mitigation Measures

The following mitigation measures will be implemented to reduce potentially significant soil impacts to insignificant levels. An acceptable level of soil erosion, as used herein, is defined as that amount of soil loss that would not affect (i.e., limit) the potential long-term beneficial uses of the soil as a growth medium or adversely affect water resources because of accelerated erosion and subsequent sedimentation. Refer to Section 5.4 for additional measures to mitigate slope instability conditions, liquefaction, landslides, subsidence, flooding, and Section 5.15 for mitigation measures related to potential impacts on water quality associated with soil erosion.

5.11.4.2 Preparation of a SWPPP

The Applicant will comply with all requirements of the General NPDES Permit for Discharges of Stormwater Associated with Construction Activity. Prior to beginning site mobilization associated with any Project element, the Applicant will develop and implement a SWPPP, in accordance with State Water Resources Control Board (SWRCB) Water Quality Order No. 2009-0009 Division of Water Quality and any other documents as necessary for the construction of the entire Project, including all areas of disturbance associated with the Project area. Prior to beginning site mobilization associated with any Project element, the Applicant will submit to the Compliance Project Manager (CPM) a copy of the Notice of Intent for Construction (and any other necessary documents) accepted by the SWRCB and submit to the CEC CPM for their files, as well as any other documents required by the permit.

5.11.4.3 Preparation of a Construction DESCP

The Applicant will obtain approval for a site-specific DESCP that addresses all Project elements. The plan will address revegetation and be consistent with the approved grading and drainage plan. The plan will be developed in accordance with Alameda County Code Title 15, Chapter 15.36.

5.11.4.4 Preparation of an Operational DESCP

The Applicant will obtain approval for a site-specific facility operation DESCP that addresses all Project site elements. The plan will include detailed plans and information for the following:

- A narrative discussion and appropriate site maps and plans showing how stormwater and sediment erosion will be managed during plant operation, including locations of permanent BMPs to be employed;
- A narrative discussion of what permanent BMPs and materials management practices will be employed at the site; and
- A narrative discussion and schedule detailing how and when inspections and maintenance of all plant operation stormwater management structures will be undertaken.

5.11.4.5 Agricultural Measures

Implementation of the Project would not result in the conversion of any Important Farmland. Therefore, farmland mitigation is not anticipated.

5.11.5 Laws, Ordinances, Regulations, and Standards

Federal, state, county, and local LORS applicable to soils are summarized in Table 5.11-3 and detailed in the following sections.

Table 5.11-3. Laws, Ordinances, Regulations, and Standards for Soils

LORS	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Federal			
1972 Amendments to Federal Water Pollution Control (CWA, including 1987 amendments)	Regulates stormwater and non-stormwater discharges from construction and industrial activities	CVRWQCB Region 5 and SWRCB. EPA has oversight authority.	Section 5.11.5.1
NRCS (1983), *National Engineering Handbook*, Sections 2 and 3	Standards for soil conservation	NRCS	Section 5.11.5.1
State			
Porter-Cologne Water Quality Control Act	A NPDES California General Activities Construction Permit is necessary if an area greater than 1 acre will be disturbed. Industrial facilities (including BESS facilities) with potential to affect stormwater discharges are required to obtain an NPDES permit during operation (Industrial Stormwater General Permit).	CVRWQCB Region 5 and SWRCB.	Section 5.11.5.2

LORS	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Warren-Alquist Act, (Assembly Bill 205) Opt-In Application	AB 205 gives CEC exclusive siting authority over energy storage facilities capable of storing at least 200 MWh of energy.	CEC	Section 5.11.5.2
PRC §-25523(a)	Provisions relating to the manner in which the proposed facility is to be designed, sited, and operated to protect environmental quality and assure public health and safety.	CEC	Section 5.11.5.2
PRC §21000 et. seq.; Guidelines for Implementation of CEQA, Appendix G	Environmental checklist form, evaluation of erosion or siltation and conversion of agricultural lands.	CEC	Sections 5.11.5.2, 5.11.2.1, and 5.11.2.3
Williamson Act	The Act creates an arrangement whereby private landowners' contract with counties and cities to voluntarily restrict land to agricultural and open space uses. Provides for lowered property taxes for lands maintained in agricultural and certain open space uses.	CEC, CVRWQCB Region 5 and SWRCB.	Sections 5.11.5.2 and 5.11.2.3.2
Local			
Alameda County Code of Ordinances, Title 15, Chapter 15.36 - Grading, Erosion and Sediment Control	County ordinance outlining the requirements for grading permits, erosion control measures, and sediment control during construction activities.	Alameda County Public Works Agency	Section 5.11.5.3
Alameda County Code of Ordinances, Title 13, Chapter 13.08 - Stormwater Management and Discharge Control	County ordinance outlining regulations for stormwater pollution prevention, including the development and implementation of SWPPPs for construction projects.	Alameda County Public Works Agency and Alameda County Flood Control and Water Conservation District	Section 5.11.5.3
Alameda County Code of Ordinances, Title 17, Chapter 17.66 – Soil Importing	County ordinance regulating the importation of soil or other fill material in unincorporated areas of the County to ensure it is related to appropriate land uses, promotes soil stability, and reduces environmental and health impacts.	Alameda County Community Development Agency and Planning Department	Section 5.11.5.3

LORS	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Alameda County Code of Ordinances, Title 6 – Health and Safety	Various sections under Title 6 address the handling and disposal of hazardous materials found in soil, ensuring that contaminated soils are managed safely and in compliance with state and federal regulations.	Alameda County Department of Environmental Health	Section 5.11.5.3
Alameda County East County Area Plan, Policy 71 - Preservation of Productive Soils	This policy aims to conserve prime soils (Class I and Class II, as defined by the USDA Soil Conservation Service Land Capability Classification) and Farmland of Statewide Importance and Unique Farmland (as defined by the California Department of Conservation FMMP) outside the Urban Growth Boundary.	Alameda County Planning Department	Section 5.11.5.3
Alameda County East County Area Plan, Policy 86 - Williamson Act Contracts	This policy states that the County shall not approve cancellation of Williamson Act contracts within or outside the County Urban Growth Boundary except where findings can be made in accordance with state law, and the cancellation is consistent with the Initiative. In no case shall contracts outside the Urban Growth Boundary be canceled for purposes inconsistent with agricultural or public facility uses. Prior to canceling any contract inside the County Urban Growth Boundary, the Board of Supervisors shall specifically find that there is insufficient non-contract land available within the Boundary to satisfy state-mandated housing requirements. In making this finding, the County shall consider land that can be made available through reuse and rezoning of non-contract land.	Alameda County Planning Department	Section 5.11.5.3
Alameda County East County Area Plan, Policy 117 - Grading	This policy states that the County shall require that where grading is necessary, the offsite visibility of cut-and-fill slopes and drainage improvements is minimized. Graded slopes shall be designed to simulate natural contours and support vegetation to blend with surrounding undisturbed slopes.	Alameda County Planning Department	Section 5.11.5.3

Notes:
EPA = U.S. Environmental Protection Agency
RWQCB = Regional Water Quality Control Board

5.11.5.1 Federal LORS

5.11.5.1.1 Federal Clean Water Act Pollution Control Act of 1972; Clean Water Act of 1977 (including its 1987 amendments)

The CWA establishes requirements for discharges of stormwater or wastewater from any point source that would affect the beneficial uses of waters of the United States. Section 402 of the CWA effectively prohibits discharges of stormwater from construction sites unless the discharge is in compliance with an NPDES permit. These authorities establish requirements for any facility or activity that has or that will discharge wastes (including sediment because of accelerated erosion) that may interfere with the beneficial uses of receiving waters.

The administering agency is the Central Valley RWQCB (CVRWQCB) under the direction of the SWRCB, which regulates stormwater discharges associated with construction activity (SWRCB 2012) for projects resulting in 1 or more acres of soil disturbance. The Project would result in a disturbance of more than 1 acre of soil. Therefore, the Project would need to be covered under the General Construction Permit (SWRCB 2012), and the Applicant will develop and implement a site-specific SWPPP to meet permit requirements. Project requirements are described in greater detail in Section 5.11.4.

5.11.5.1.2 U.S. Department of Agriculture, Soil Conservation Service, National Engineering Handbook (1983), Sections 2 and 3

The USDA prescribes standards of technical excellence for the planning, design, and construction of soil conservation practices. The administering agency for the above authority is the NRCS.

Sections 2 and 3 of the USDA NRCS National Engineering Handbook (NRCS 1983) provide standards for soil conservation during planning, design, and construction activities. The Applicant will adhere to the appropriate standards associated with the planning, design, and construction of soil conservation practices.

5.11.5.2 State LORS

5.11.5.2.1 California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code, Division 7) governs water quality of all state waters, including surface waters and groundwater. Under the Porter-Cologne Water Quality Control Act, SWRCB has the ultimate authority over water quality policy on a statewide level, and nine RWQCBs establish and implement water quality standards specific for each respective region. The CVRWQCB regulates water quality in the Project area. The Project is required to meet water quality standards that are identified in the Water Quality Control Plan for this region.

Because the Project will disturb more than 1 acre of land, it will require an NPDES California General Construction Activity Stormwater Permit before discharging any stormwater (also see Section 5.15, Water Resources). Among other things, this permit requires the management of erosion and soil movement.

5.11.5.2.2 Warren-Alquist Act (Assembly Bill 205) Opt-In Application

Assembly Bill 205 (AB 205), which was signed into California law in June 2022, gives CEC exclusive siting authority over energy storage facilities capable of storing at least 200 MWh of energy. A developer may submit an application to the CEC under this expedited AB 205 Opt-In Application process instead of an application for entitlements from the jurisdiction in which the project is located.

AB 205 specifically provides that the certification does not supersede the authority of an exclusive list of agencies: the California State Lands Commission, the California Coastal Commission, the San Francisco

Bay Conservation and Development Commission, the SWRCB or the applicable RWQCB, local air quality management districts, or the California Department of Toxic Substances Control.

The Applicant is pursuing licensing for the Viracocha Hill BESS through the CEC using the AB 205 Opt-In Application process.

5.11.5.2.3 California Environmental Quality Act, California Public Resources Code §21000 *et. seq.*; Guidelines for Implementation of the California Environmental Quality Act of 1970, 14 CCR §15000 - 15387, Appendix G

The CEQA Guidelines specify that: "A project will normally have a significant effect on the environment if it will … Cause substantial flooding, erosion or siltation; …Convert prime agricultural land to non-agricultural use or impair the agricultural productivity of prime agricultural lands."

The administering agency for the above authority is the CEC.

5.11.5.2.4 California Land Conservation Act (Williamson Act). Cal. Government Code Title 5, Part 1, Chapter 7 Section §§51200-51295

The Williamson Act provides for lowered property taxes for lands maintained in agricultural and certain open space uses. The landowner enters into a contract with the county or city to restrict land uses to those compatible with agriculture, wildlife habitat, scenic corridors, recreational use, or open space. In return, the local authorities calculate the property tax assessment based on the actual use of the land instead of its potential value assuming full commercial development. To be eligible, the land must be designated by a city or county as an agricultural preserve, scenic highway corridor, or wildlife habitat area; or it must be actively used for the 3 years immediately preceding the beginning of the contract as a salt pond, managed wetland, recreational or open space area.

The administering agency for the above authority is the Department of Conservation, Office of Land Conservation.

The Project parcel is enrolled in a Williamson Act contract but does not meet any of the criteria for classification as Prime Agricultural Land.

5.11.5.3 Local LORS

5.11.5.3.1 Alameda County Code of Ordinances, Title 15, Chapter 15.36 – Grading, Erosion and Sediment Control

Alameda County's grading ordinance outlines the requirements for grading permits, erosion control measures, and sediment control during construction activities within unincorporated areas of the County.

Except for the specific exceptions, no person shall do or permit to be done any grading on any site in the unincorporated area of Alameda County without a valid permit obtained from the director of Alameda County Public Works Agency.

The administering agency is the Alameda County Public Works Agency.

5.11.5.3.2 Alameda County Code of Ordinances, Title 13, Chapter 13.08 – Stormwater Management and Discharge Control

Alameda County's stormwater management and discharge control ordinance outlines regulations for stormwater pollution prevention, including the development and implementation of SWPPPs for construction projects.

Except for the exemptions described in Section 13.08.255, no person shall engage in development, as defined in Chapter 13.08, without first obtaining a valid County stormwater permit from the director of Alameda County Public Works Agency.

The administering agencies are the Alameda County Public Works Agency and Alameda County Flood Control and Water Conservation District.

5.11.5.3.3 Alameda County Code of Ordinances, Title 17, Chapter 17.66 – Soil Importing

Alameda County's soil importing ordinance regulates the importation of soil or other fill material in unincorporated areas of the County to ensure it is related to appropriate land uses, promotes soil stability, and reduces environmental and health impacts.

The administering agencies are the Alameda County Community Development Agency and the Planning Department.

5.11.5.3.4 Alameda County Code of Ordinances, Title 6 – Health and Safety

Various sections under Title 6 address the handling and disposal of hazardous materials found in soil, ensuring that contaminated soils are managed safely and in compliance with state and federal regulations.

The administering agency is Alameda County Department of Environmental Health.

5.11.5.3.5 Alameda County East County Area Plan

5.11.5.3.5.1 Policy 71 - Preservation of Productive Soils

Goal: This policy aims to conserve prime soils (Class I and Class II, as defined by the USDA Soil Conservation Service Land Capability Classification) and Farmland of Statewide Importance and Unique Farmland (as defined by the California Department of Conservation FMMP) outside the Urban Growth Boundary.

5.11.5.3.5.2 Policy 86 - Williamson Act Contracts

Goal: This policy states that the County shall not approve cancellation of Williamson Act contracts within or outside the County Urban Growth Boundary, except where findings can be made in accordance with state law, and the cancellation is consistent with the Initiative. In no case shall contracts outside the Urban Growth Boundary be canceled for purposes inconsistent with agricultural or public facility uses. Prior to canceling any contract inside the County Urban Growth Boundary, the Board of Supervisors shall specifically find that there is insufficient non-contract land available within the Boundary to satisfy state-mandated housing requirements. In making this finding, the County shall consider land that can be made available through reuse and rezoning of non-contract land.

5.11.5.3.5.3 Policy 117 - Grading

Goal: This policy states that the County shall require that where grading is necessary, the offsite visibility of cut-and-fill slopes and drainage improvements is minimized. Graded slopes shall be designed to simulate natural contours and support vegetation to blend with surrounding undisturbed slopes.

5.11.6 Agencies and Agency Contacts

Applicable permits and agency contacts for soils are shown in Table 5.11-4.

Table 5.11-4. Permits and Agency Contacts for Soils

Permit or Approval	Agency Contact	Applicability
NPDES Permitting; Notice of Intent, NPDES General Construction Stormwater Permit	Lynn Coster Program Manager CVRQCB (Region 5) 11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670-6114 530.5224.2437 Lynn.coster@waterboards.ca.gov	NPDES Permit governing stormwater discharges associated with construction activity for any disturbance of greater than 1 acre
Alameda County Grading Permit	Alameda County Public Works Agency 399 Elmhurst Street, Room 141 Hayward, CA 94544 510.567.5868 info@acpwa.org	County permit governing excavation, filling, or land leveling that disturbs more than 50 cubic yards of soil.
Alameda County Stormwater Permit	Alameda County Public Works Agency 399 Elmhurst Street, Room 141 Hayward, CA 94544 510.567.5868 info@acpwa.org	County permit governing construction projects that disturb one acre or more of land.
Alameda County Building Permit	Alameda County Public Works Agency 399 Elmhurst Street, Room 141 Hayward, CA 94544 510.567.5868 info@acpwa.org	County permit governing construction of new buildings.

Note:

County permits may be preempted by state or federal regulatory authorizations.

5.11.7 Permits and Permit Schedule

It is expected that all the required ministerial permits for grading, building, and development can be secured as long as completed applications are provided to the appropriate agencies prior to construction. The grading, stormwater, and building, permits would be started after receiving approval from the planning department for the Project. Other permits that relate to soils, such as the NPDES, are evaluated in other sections (refer to Section 5.15, Water Resources).

5.11.8 References

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California Department of Conservation. 2024. California Williamson Act Enrollment Finder. Available at: https://maps.conservation.ca.gov/dlrp/WilliamsonAct/. Accessed December 2024.

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U.S. Department of Agriculture National Resources Conservation Service (USDA NRCS). 2024c. *Soils Index Map* (1:24,000 scale). Accessed December.

U.S. Department of Agriculture National Resources Conservation Service (USDA NRCS). 2024d. *Important Farmland Maps* (1:24,000 scale). Accessed December.

5.12 Traffic and Transportation

This section addresses the potential effects of the Viracocha Hill Battery Energy Storage System Project (Viracocha Hill BESS or Project) on traffic and transportation. Section 5.12.1 describes the affected environment of the local and regional traffic and transportation routes surrounding the Project site. Section 5.12.2 presents the environmental analysis of the Project's effects on local traffic volumes and patterns. Section 5.12.3 evaluates potential cumulative effects on traffic and transportation because of other, simultaneous projects. Section 5.12.4 describes mitigation measures for the Project. Section 5.12.5 describes applicable laws, ordinances, regulations, and standards (LORS). Section 5.12.6 lists the applicable regulatory agencies and contacts. Section 5.12.7 discusses required traffic and transportation permits. Section 5.12.8 lists the references used to prepare this section.

5.12.1 Affected Environment

Reclaimed Wind LLC (the Applicant) plans to construct, own, and operate an up to 362.8-MW-hour battery energy storage system project in Alameda County, California, adjacent to the proposed Sand Hill Wind Repower Project. The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

The Project area is located approximately 0.8 mile south of the Bethany Reservoir, 0.15 mile north of Altamont Pass Road, and 3.3 miles west of the city limits of Tracy, California. Figure 15.12-1 shows the Project location and vicinity.

5.12.1.1 Existing Regional and Local Transportation Facilities

The surrounding regional and local roadway networks are shown on Figure 5.12-2. State highways and county roadways provide access to the Project site. Regional access is provided by Interstate 580 (I-580), and local access is provided by Altamont Pass Road and Grant Line Road.

5.12.1.1.1 Interstate 580

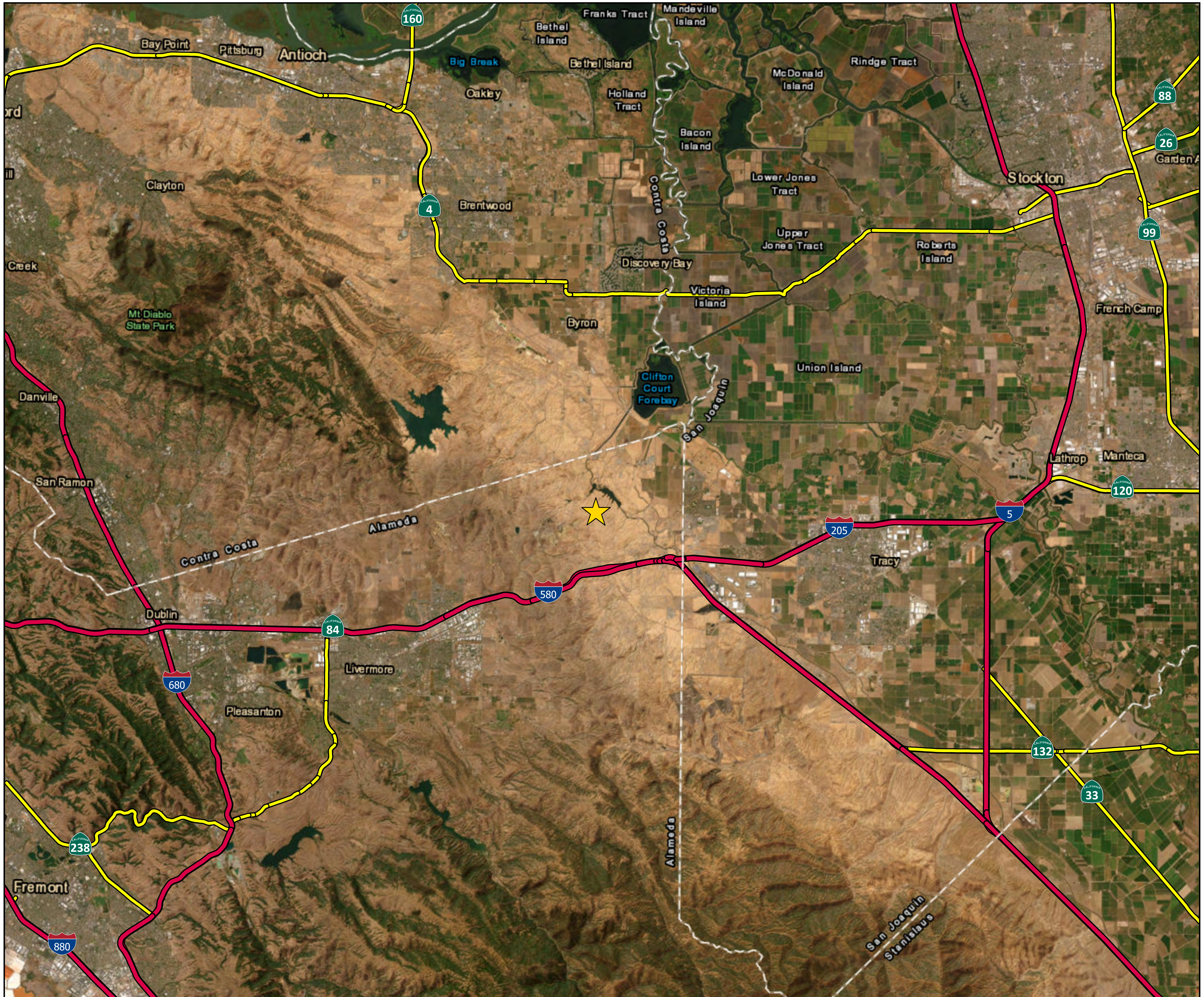
I-580 is the major east-west truck travel route and main throughway in eastern Alameda County that connects to the Sacramento and San Joaquin valleys. It also provides a major connection to I-5. I-580 at Grant Line Road is a freeway with five westbound lanes and four eastbound lanes.

5.12.1.1.2 Altamont Pass Road

Altamont Pass Road is primarily an east-west roadway that begins at Greenville Road to the west and ends at Grant Line Road to the east. Altamont Pass Road near the Project site is a two-lane rural roadway.

5.12.1.1.3 Grant Line Road

Grant Line Road is primarily an east-west roadway that begins south of I-580 (connecting to I-580 via a diamond interchange) and ends at Byron Highway. Grant Line Road near the Project site is a two-lane rural roadway. The intersections of Grant Line Road with Altamont Pass Road and the I-580 ramps are unsignalized. Traffic approaching Grant Line Road on Altamont Pass Road and the I-580 ramps is stop-controlled. The through movements on Grant Line Road are uncontrolled.



Legend

Viracocha Hill BESS Project

State Highway

Interstate

Source:
1) ESRI Aerial Images

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Figure 5.12-1
Regional Road Network
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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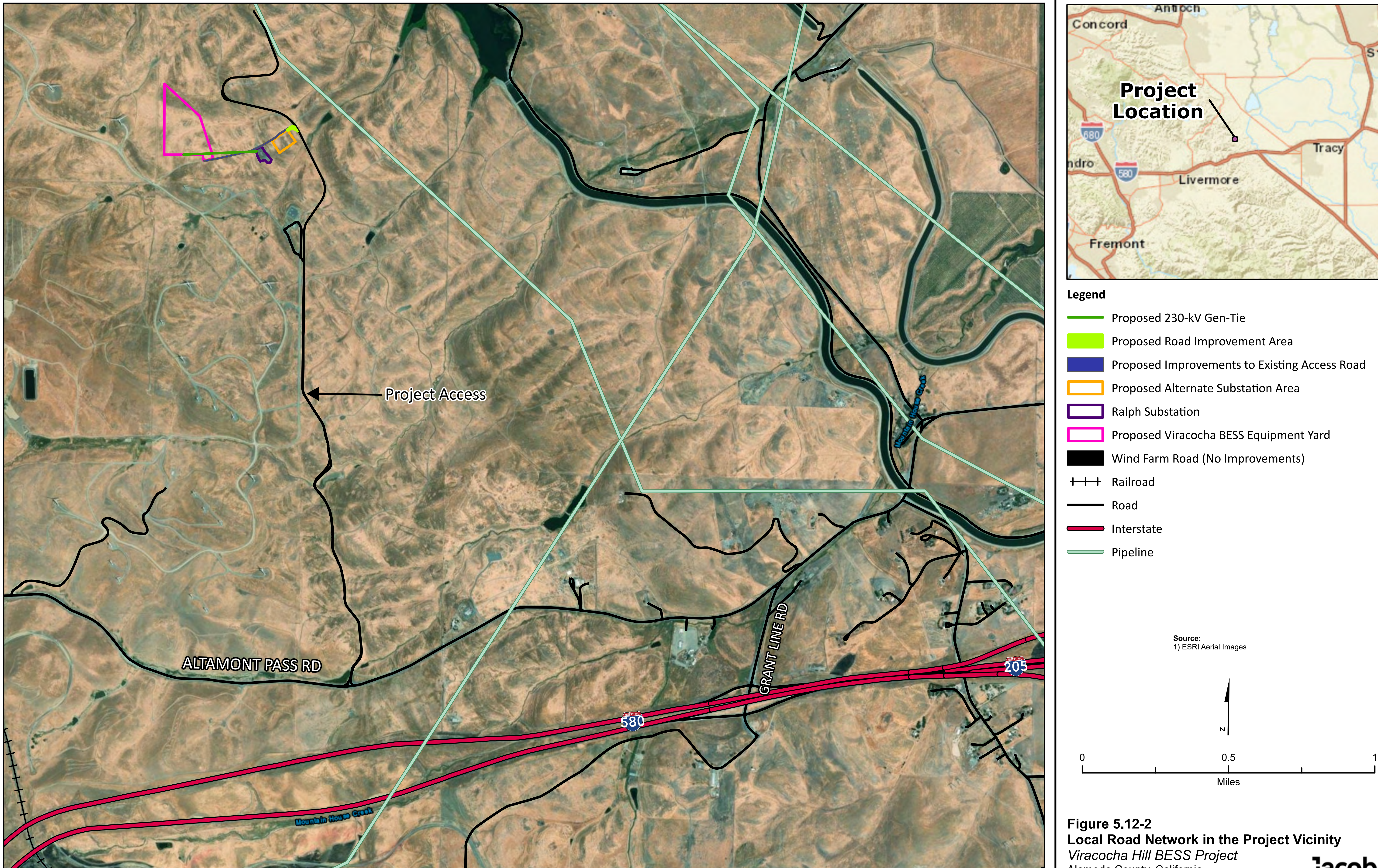

Figure 5.12-2
Local Road Network in the Project Vicinity
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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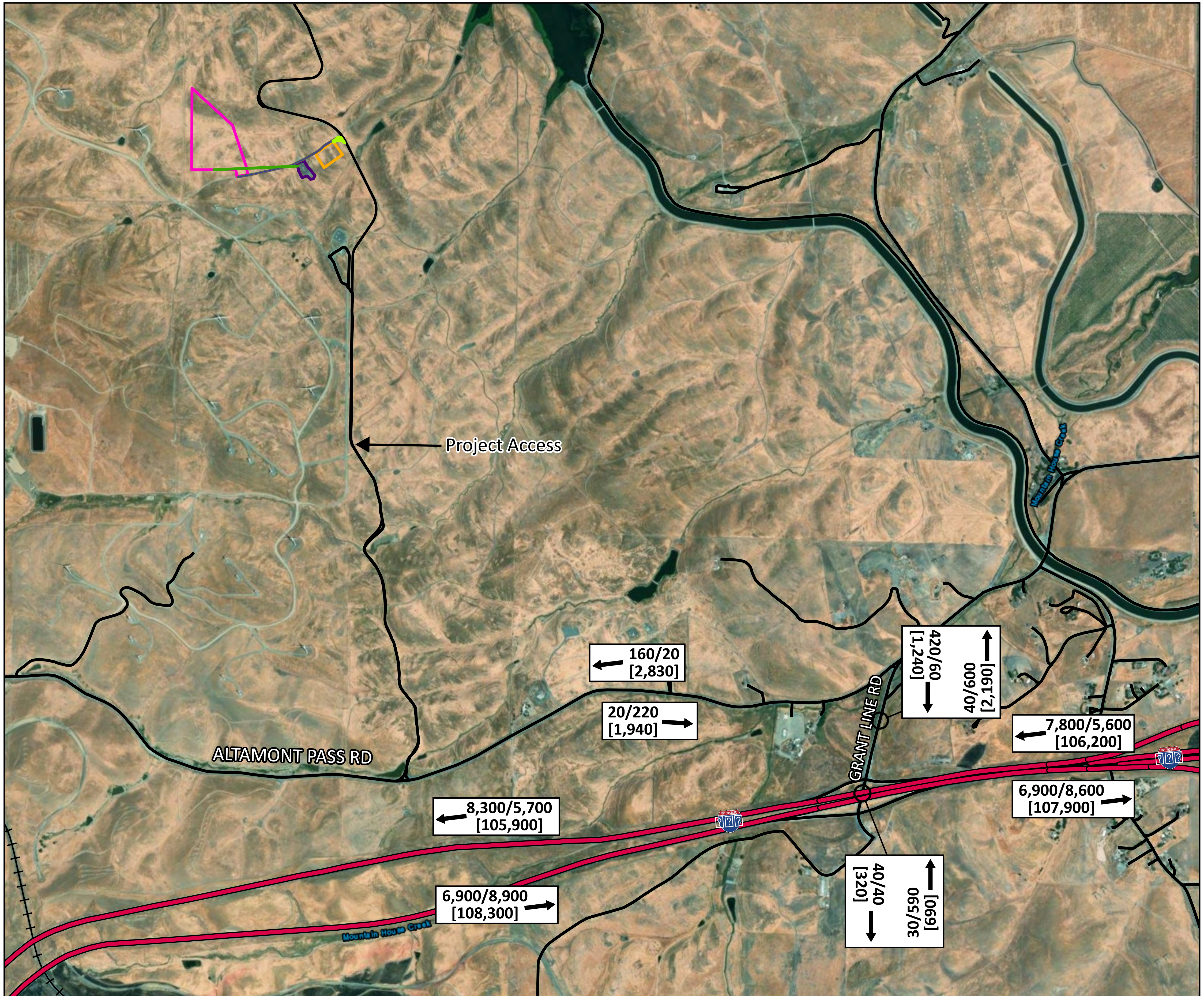
5.12.1.1.4 Year 2024 Existing Traffic Conditions

Year 2024 existing average daily, AM, and PM peak hour segment traffic volumes on the freeway mainline and local arterial roadways are illustrated on Figure 5.12-3. The year 2024 traffic volumes were developed based on the 2019 Alameda Countywide Travel Demand Model (based on the Plan Bay Area 2040)(MTC and ABAG 2017). Year 2024 traffic volumes were estimated by interpolating the travel demand model results for the base year (2020) and future year (2040) model. Volume plots for years 2020 and 2040 from the travel demand model are published on the Alameda County Transportation Commission (CTC) Congestion Management Program website (https://www.alamedactc.org/planning/congestion-management-program).

The estimated year 2024 traffic volumes on I-580 were compared to the year 2024 ground counts on I-580 extracted from the California Department of Transportation (Caltrans) Performance Measurement System (PeMS) website to ensure the estimated volumes represent current travel conditions. The comparison shows that the estimated traffic volumes closely match the PeMS data. Therefore, it is assumed that the estimated volumes would represent year 2024 traffic conditions. Traffic data from the Caltrans PeMS website were only used to verify the estimated traffic volumes and not used to develop the traffic volumes. Traffic data from the Caltrans PeMS website focus on state highways. Traffic data on the local arterial roadways are not provided.

The estimated year 2024 traffic volumes were adjusted to passenger car equivalents (PCEs) to reflect truck traffic. Truck traffic information on I-580 was obtained from the Caltrans census traffic data for years 2020, 2021, and 2022 at Greenville Road, the closest verified location to the Project site. For all 3 years, approximately 8% of the total traffic on I-580 are trucks with 24% light/medium trucks and 76% heavy trucks. Truck traffic data on Altamont Pass Road and Grant Line Road were not readily available. However, because the two roadways are in a rural setting and would not typically be considered a truck route due to roadways having insufficient road base to support heavy truck loads, truck traffic is assumed to be the industry standard 2% with all trucks having a light/medium truck designation.



Legend

- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)
- Railroad
- Road
- Interstate
- 90/90 [196] Weekday AM Peak Hr/PM Peak Hr Volume [Average Daily Traffic Volume]

Source:
1) ESRI Aerial Images

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Miles

Figure 5.12-3
Year 2024 Traffic Volumes (PCE)
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow from a vehicle driver's perspective based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined, ranging from LOS A (free-flow conditions) to LOS F (over-capacity conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result, and the results are designated as LOS F.

The LOS analysis methodology for roadway segments consists of dividing the roadway volume by the capacity of the roadway based on Table 5.12-1 to determine the Volume-to-Capacity (V/C) ratio. Roadway capacity for the different types of roadways and area type is based on the 2019 Alameda Countywide Travel Demand Model. The roadway capacity is a 1-hour capacity (passenger equivalents or PCE per hour). The travel demand model uses level of service (LOS) "E/F" capacities representing the maximum flow. The associated V/C ratios are compared with the LOS grade ranges of Table 5.12-2 to assign a qualitative letter grade that represents operations of the roadway.

Table 5.12-1. Roadway Capacity by Functional Classification

Road/Area Type	Lane Capacity (PCE per hour per lane)[1]
Freeway/Rural	2,150
Collector/Rural	950

Source: Alameda Countywide Travel Demand Model Final Documentation Report (Kittelson & Associates 2019)

Table 5.12-2. Roadway Segment Level of Service Criteria

Level of Service (LOS)	Freeway Segment Volume-to-Capacity (V/C) Ratio	Arterial Segment Volume-to-Capacity (V/C) Ratio
A	0.00 to 0.35	0.00 to 0.59
B	0.36 to 0.58	0.60 to 0.69
C	0.60 to 0.75	0.70 to 0.79
D	0.76 to 0.90	0.80 to 0.89
E	0.91 to 1.00	0.90 to 0.99
F	>1.00	>1.00

Source: 2023 Congestion Management Program (Alameda CTC 2023) and Draft Environmental Impact Report East County Area Plan (Alameda County 1993)

Table 5.12-3 is a summary of the peak hour traffic volumes and V/C ratios for year 2024 existing conditions. The I-580 freeway segments are currently operating at near or over capacity during the westbound AM peak hour and the eastbound PM peak hour at LOS E or F. All study segments on the local arterial are currently operating below capacity with V/C ratios of less than 0.65 at LOS B or better.

Table 5.12-3. Year 2024 Existing Roadway Segment Peak Hour LOS Analysis Summary

Roadway	Location		Number of Lanes	Road/Area Type	Capacity (PCE per hour)	Year 2024 Existing PCE*					
						AM Peak Hour			PM Peak Hour		
						Vol	V/C	LOS	Vol	V/C	LOS
I-580	West of Grant Line Road	EB	4	Freeway/ Rural	8,600	6,900	0.80	D	8,900	1.04	F
		WB	4	Freeway/ Rural	8,600	8,300	0.97	E	5,700	0.66	C
	East of Grant Line Road	EB	4	Freeway/ Rural	8,600	6,900	0.80	D	8,600	1.00	F
		WB	5	Freeway/ Rural	10,750	7,800	0.73	C	5,600	0.52	B
Altamont Pass Road	West of Grant Line Road	EB	1	Collector/ Rural	950	20	0.02	A	220	0.23	A
		WB	1	Collector/ Rural	950	160	0.17	A	20	0.02	A
Grant Line Road	Altamont Pass Road and I-580 WB ramps	NB	1	Collector/ Rural	950	40	0.04	A	600	0.63	B
		SB	1	Collector/ Rural	950	420	0.44	A	60	0.06	A
	I-580 WB ramps and I-580 EB ramps	NB	1	Collector/ Rural	950	30	0.03	A	590	0.62	B
		SB	1	Collector/ Rural	950	40	0.04	A	40	0.04	A

Notes:
* PCE factor is based on the Alameda Countywide Travel Demand Model Final Documentation Report (Kittelson & Associates 2019) and are as follows:
- Heavy Trucks – PCE factor is 2.0.
- Light/Medium Trucks – PCE factor is 1.5.

5.12.1.2 Truck Routes—Weight and Load Limitations

Per Title 10, Chapter 10.16 of the Alameda County Code of Ordinances, within Alameda County, transportation permits for operating any oversize or overweight vehicles on federally designated highway system are required. The permit would be submitted to the office of the director of public works for approval. The ordinance states that persons requiring terminal access from the federally designated highway system shall submit to the office of the director of public works a permit application in the form provided by the county, with all information required by the director of public works. Upon receipt of the permit application, the director of public works shall ascertain whether the proposed destination meets the requirements for an interstate truck terminal and whether the proposed route is feasible. Route evaluation shall be based on lane widths, intersection geometrics, and compatibility with existing traffic volumes. Access from a federally designated highway system may also require Caltrans approval.

Alameda County has not adopted specific weight and load limitations for County roadways, and instead refers to the California Vehicle Code (CVC) specifications. CVC Section 35550 provides the following specifications for weight and load limitations:

1. The gross weight on any one axle shall not exceed 20,000 pounds, and the gross weight upon any one wheel, or wheels, supporting one end of an axle, shall not exceed 10,500 pounds.
2. The gross weight limit for any one wheel, or wheels, shall not apply to vehicles with loads of livestock.
3. The maximum wheel load is the lesser of the following:
   a. The load limit established by the tire manufacturer, on the tire sidewall.
   b. A load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width on the tire sidewall. The steering axle, however, must go by the load limit by the tire manufacturer.

5.12.1.3 Pedestrian and Bicycle Facilities

The Project is in a rural setting surrounded by undeveloped rural land with no pedestrian or bicycle infrastructure.

Based on a review of the County's Bicycle and Pedestrian Master Plan (Alameda County 2019), unincorporated Alameda County currently has approximately 65.8 miles of bikeways including Class I (4.4 miles), Class II (40.8 miles), and Class III (20.6 miles). There are currently no Class IV bikeways in unincorporated Alameda County. There are no bike lanes adjacent to the Project site.

For future bikeways, the County's Bicycle and Pedestrian Master Plan recommends an additional 200 miles of bicycle facilities that would increase the system-wide total mileage of bikeways to 265.9 miles, including Class I shared use paths (32.2 miles), Class II bike lanes (58.9 miles), Class III bike routes (164.8 miles), and Class IV separated bikeways (10 miles) in Alameda County. Within the Project area, a Class III bike route (signed route only) is proposed along Altamont Pass Road.

5.12.1.4 Public Transportation

There is currently no public transit service provided in the Project area, nor is any such service anticipated to be established in the area in the foreseeable future. To the west and south of the Project area, Livermore Amador Valley Transit Authority (LAVTA) provides the closest bus service approximately 6 miles from the Project area. The LAVTA provides regional and local services through eastern Alameda County and western San Joaquin County. To the east of the Project area, San Joaquin Regional Transit District provides bus services in Tracy. The closest bus service is approximately 10 miles east of the Project area.

5.12.1.5 Rail Traffic

The Altamont Corridor Express (ACE) train is a commuter train service managed by the San Joaquin Regional Rail Commission for travel between Stockton and San Jose. The passenger train uses the Union Pacific railroad tracks through the Project area, with grade-separated crossings of I-580 and Altamont Pass Road approximately 3 miles southwest of the Project area. No future rail is proposed in the Project area.

5.12.1.6 Air Traffic

There are four airports in the vicinity of the Project. Byron Airport is located about 4.5 miles north of the Project, Tracy Municipal Airport is located about 11.5 miles southeast, Meadowlark Field is located about 8.5 miles southwest, and Livermore Municipal Airport is located about 12.5 miles west.

5.12.2 Environmental Analysis

This subsection assesses the traffic and transportation impacts associated with the construction and operation of an up to 362.8-MW-hour BESS in Alameda County. The traffic and transportation impact assessment includes a trip generation analysis of the Project's construction and (permanent) operations and maintenance (O&M), a LOS/capacity analysis and a vehicle mile traveled (VMT) analysis. Although the California Environmental Quality Act (CEQA) specifically excludes the analysis of LOS, a LOS analysis included under CEQA Threshold (a) to comply with the California Energy Commission (CEC) requirements for Opt-In Applications.

The assessment is based on the East County Area Plan and applicable CEQA guidelines, including adherence to Senate Bill (SB) 743 and guidelines from the Governor's Office of Planning and Research (OPR) (OPR 2018). The LOS analysis includes six freeway and roadway segments where the Project could cause an impact on traffic due to construction activities. The LOS analysis evaluates the existing (Year 2024) and cumulative (Year 2027) conditions with and without the Project traffic. The LOS analysis compares the estimated traffic volumes with peak hour roadway capacities from the Alameda County Travel Demand Model.

5.12.2.1 Project Conditions

5.12.2.1.1 Construction

The Project construction trip generation was based on data on proposed construction activities. Specific data used include the anticipated construction schedule, maximum number of workers onsite during each construction phase, vendor trips, and truck haul trips required for each month of construction. As discussed in Section 2, the Project has a construction schedule of approximately 14 months beginning in the second quarter of 2026 and ending in the third quarter of 2027. The Project has an operational life of at least 30 years. Transportation impacts of decommissioning at the end of the Project's operational life are expected to be similar to the impacts from construction outlined in this section. However, traffic volumes within the study area will need to be reassessed. A Decommissioning Plan will be prepared for the Project and will be updated immediately prior to decommissioning. The Decommissioning Plan will include measures specific to transportation impacts of decommissioning, if necessary.

The total construction trip generation will vary depending on the specific phase and construction stage. The peak of construction activity is anticipated to occur during a 4-month period. Generally, construction work schedules are expected to be at least 10 hours per day 6 days per week. Typically, the workday would consist of one shift beginning as early as 6:00 AM and ending as late as 7:00 PM. The work schedule may be modified throughout the construction period to account for changes in weather conditions. To provide a conservative analysis, all construction workers were assumed to arrive inbound to the site during the AM peak period (7:00 AM to 9:00 AM) and all workers were assumed to depart the site during the PM peak period (4:00 PM to 6:00 PM). Truck deliveries are typically sporadic throughout the workday; however, for a conservative analysis, most truck arrivals and departures were assumed to arrive and depart during the AM and PM peak periods.

Table 5.12-4 summarizes the total trips generated in the peak construction phase. To account for the impact construction-related trucks may have compared to passenger vehicles, PCE factors were applied to the trip generation estimates to account for truck traffic associated with construction activity.

It is estimated that a maximum of 184 daily two-way trips will occur during peak construction. The daily total includes 90 trips in the AM peak hour and 90 trips in the PM peak hour. With adjustment utilizing PCE factors, the Project would generate approximately 196 daily PCE two-way trips, 94 AM peak hour PCE trips, and 94 PM peak hour PCE trips. For all other months of construction, the volume of vehicular traffic is estimated to be less than the peak construction months. All construction-related traffic would be temporary and short-term and would no longer affect the study area roadway network upon completion of the Project.

Table 5.12-4. Peak Project Construction Trip Generation

Trip Type	Daily Quantity		ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Non-PCE Adjusted Trip Generation									
Light/Medium Trucks	4	trucks	8	2	2	4	2	2	4
Heavy Trucks (Haul Trucks)	4	trucks	8	1	1	2	1	1	2
Workers	84	workers	168	81	3	84	3	81	84
Peak Trip Total (Non-PCE)			184	84	6	90	6	84	90
PCE Adjusted Trip Generation									
Light/Medium Trucks (PCE=1.5)	4	trucks	12	3	3	6	3	3	6
Heavy Trucks (Haul Trucks) (PCE=2)	4	trucks	16	2	2	4	2	2	4
Workers	84	workers	168	81	3	84	3	81	84
Peak Trip Total (PCE)			196	86	8	94	8	86	94

ADT = average daily traffic

Project construction trip distribution assumes 50% of the total construction traffic would originate west of the Project area, from the Livermore area and areas to the west, and 50% of the construction traffic would originate from east of the Project area, from the Tracy area and areas to the east. Project trips were assigned to the study area intersections by applying the trip generation estimates to the trip distribution percentages. The trip assignments are shown in Figures 5.12-4 and 5.12-5.

5.12.2.1.2 Operations and Maintenance

The permanent operation (or O&M) of the Project is expected to have nominal operation vehicular trips (one to two workers entering and exiting the Project area once a month) associated with routine maintenance and upkeep of facilities.

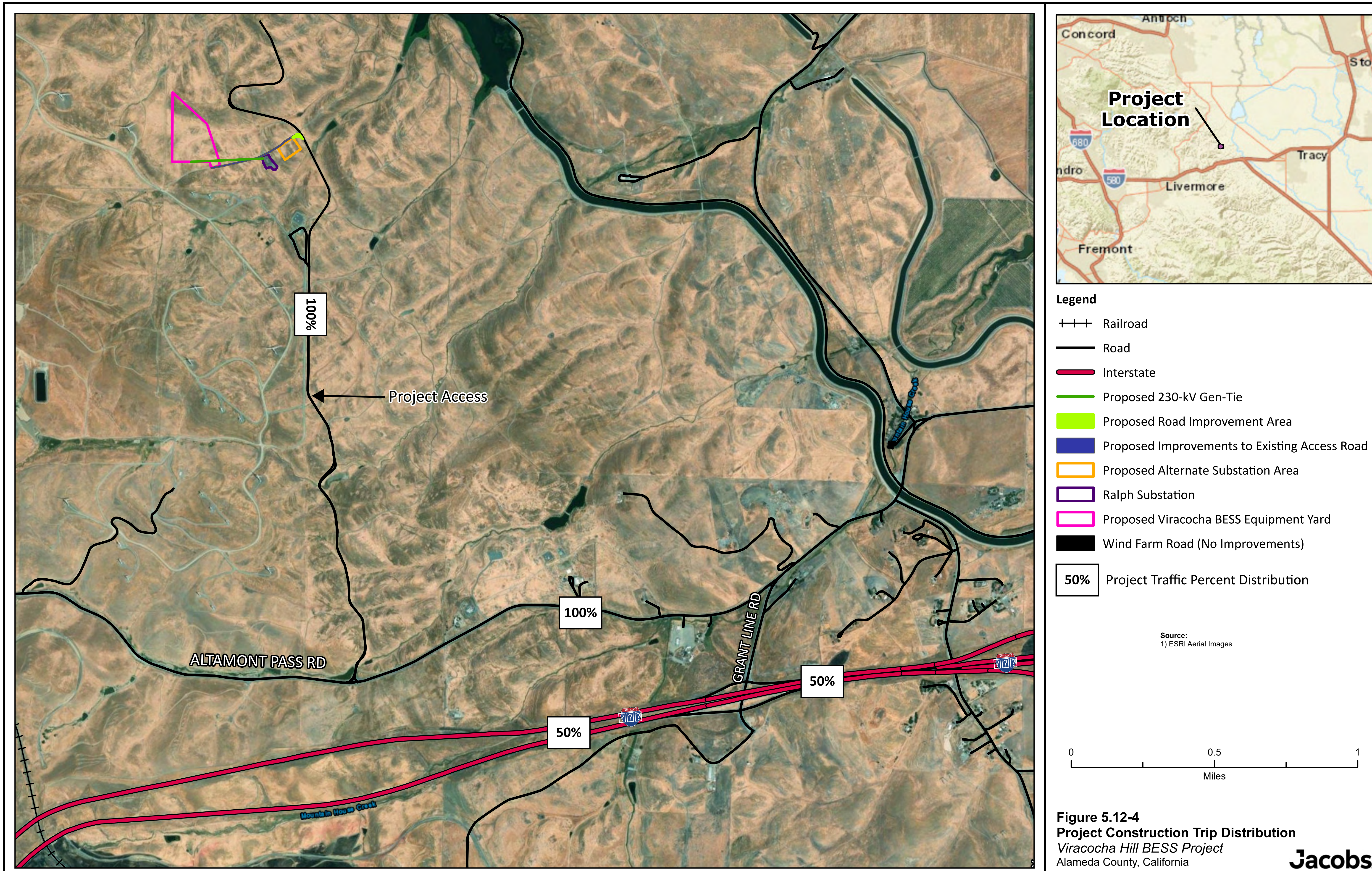
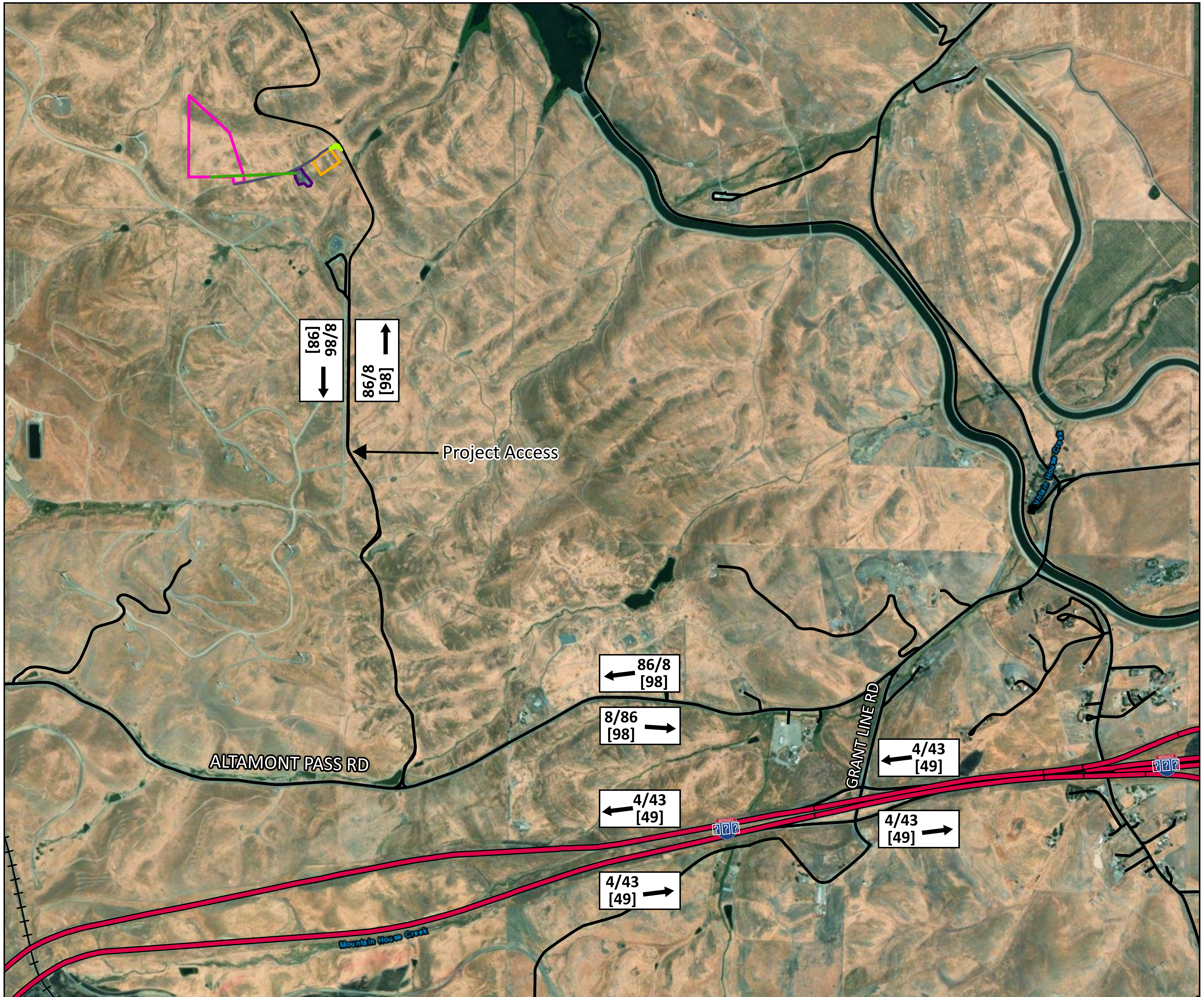


Figure 5.12-4
Project Construction Trip Distribution
Viracocha Hill BESS Project
Alameda County, California

Jacobs



Legend

- Railroad
- Road
- Interstate
- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)
- 90/90 [196] Weekday AM Peak Hr/PM Peak Hr Volume [Average Daily Traffic Volume]

Source:
1) ESRI Aerial Images

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Figure 5.12-5
Project Construction Trip Assignment (PCE)
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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5.12.2.1.3 LOS Analysis – Year 2024 Existing Plus Project Construction Conditions

Consistent with CEC requirements, a LOS analysis was conducted at the study segments with the Project-added construction traffic. Construction trip generation estimates were added to the year 2024 existing volumes along the study roadways to develop the Year 2024 Existing plus Project Construction condition, as shown on Figure 5-12-6.

Table 5.12-5 is a summary of the average daily traffic (ADT) volumes with added Project construction traffic at the study segments. The added daily Project construction volumes at the study segments range from 49 to 98 vehicle trips during the weekday AM and PM peak hours. With the added Project construction traffic, the year 2024 ADT volumes increase by 0.05 to 15%.

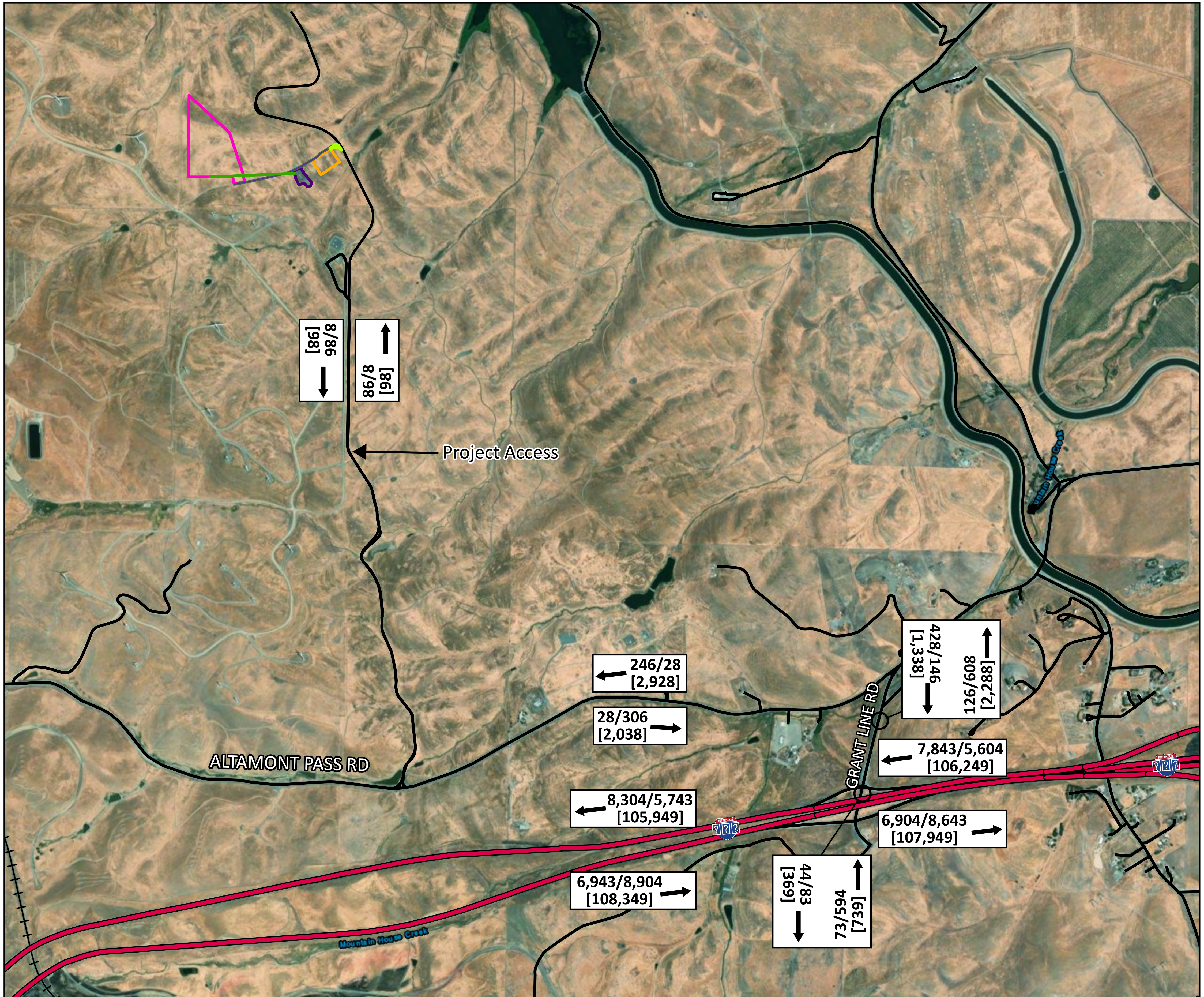
Table 5.12-5. Existing with Project Construction Traffic Roadway Segment ADT

Roadway	Location		Year 2024 Existing ADT (PCE)	Total Project ADT (PCE)/ % Change
I-580	West of Grant Line Road	EB	108,300	49 / 0.05 %
		WB	105,900	49 / 0.05 %
	East of Grant Line Road	EB	107,900	49 / 0.05 %
		WB	106,200	49 /0.05 %
Altamont Pass Road	West of Grant Line Road	EB	1,940	98 /5%
		WB	2,830	98 / 3%
Grant Line Road	Altamont Pass Road and I-580 WB ramps	NB	2,190	98 / 4%
		SB	1,240	98 /8%
	I-580 WB ramps and I-580 EB ramps	NB	690	49 /7%
		SB	320	49 /15%

As stated in Section 5.12.6.3, the Alameda County East County Area Plan (ECAP) focuses on roadway segment LOS on major arterials and interstates within Alameda County. The ECAP thresholds of LOS D or better for major arterials and LOS E or better on freeways within unincorporated areas.

Table 5.12-6 is a summary of the peak hour traffic volumes and V/C ratios for 2024 existing with Project construction traffic. The added Project construction volumes at the study segments range from 4 to 86 vehicle trips during the AM and PM peak hours.

On I-580, added Project construction trips range from 4 to 43 trips during the AM and PM peak hours. In the existing peak direction of traffic (generally westbound AM and eastbound PM), Project construction traffic is added to an already degraded segment (operating at near or over capacity; LOS E or F). However, there is no clear direction about whether adding trips (particularly a small number) to a segment already operating at LOS E or F would constitute an impact. In the non-peak direction of traffic (generally eastbound AM and westbound PM), the I-580 study segments is expected to operate at LOS D or better with the Project construction traffic. On Grant Line Road and Altamont Pass Road, added Project construction trips range from 4 to 86 trips during the AM and PM peak hours. As shown in the table, the study segments on the arterial roadways are expected to operate at LOS B or better with Project construction traffic. Therefore, construction-generated trips are not expected to change operations to worse than LOS E on I-580 (or worse LOS prior to construction) and LOS D on the arterial roadways, so the Project will be consistent with Plan Policy 193 from the ECAP.



Legend

- Railroad
- Road
- Interstate
- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)
- 90/90 [196] Weekday AM Peak Hr/PM Peak Hr Volume [Average Daily Traffic Volume]

Source:
1) ESRI Aerial Images

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Figure 5.12-6
Year 2024 plus Project Construction Traffic Volumes (PCE)
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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Table 5.12-6. Year 2024 Existing with Project Construction Traffic Roadway Segment Peak Hour LOS Analysis Summary

Roadway	Location		No. of Lanes	Road/Area Type	Capacity (PCE per hour)	Year 2024 Existing PCE[1]						Project Construction		Year 2024 Existing + Project Construction PCE[1]					
						AM Vol	AM V/C	AM LOS	PM Vol	PM V/C	PM LOS	AM Vol	PM Vol	AM Vol	AM V/C	AM LOS	PM Vol	PM V/C	PM LOS
I-580	West of Grant Line Road	EB	4	Freeway/ Rural	8,600	6,900	0.80	D	8,900	1.04	F	43	4	6,943	0.81	D	8,904	1.04	F
		WB	4	Freeway/ Rural	8,600	8,300	0.97	E	5,700	0.66	C	4	43	8,304	0.97	E	5,743	0.67	C
	East of Grant Line Road	EB	4	Freeway/ Rural	8,600	6,900	0.80	D	8,600	1.00	F	4	43	6,904	0.80	D	8,643	1.01	F
		WB	5	Freeway/ Rural	10,750	7,800	0.73	C	5,600	0.52	B	43	4	7,843	0.73	C	5,604	0.52	B
Altamont Pass Road	West of Grant Line Road	EB	1	Collector/ Rural	950	20	0.02	A	220	0.23	A	8	86	28	0.03	A	306	0.32	A
		WB	1	Collector/ Rural	950	160	0.17	A	20	0.02	A	86	8	246	0.26	A	28	0.03	A
Grant Line Road	Altamont Pass Road and I-580 WB ramps	NB	1	Collector/ Rural	950	40	0.04	A	600	0.63	B	86	8	126	0.13	A	608	0.64	B
		SB	1	Collector/ Rural	950	420	0.44	A	60	0.06	A	8	86	428	0.45	A	146	0.15	A
	I-580 WB ramps and I-580 EB ramps	NB	1	Collector/ Rural	950	30	0.03	A	590	0.62	B	43	4	73	0.08	A	594	0.63	B
		SB	1	Collector/ Rural	950	40	0.04	A	40	0.04	A	4	43	44	0.05	A	83	0.09	A

Notes:
1 PCE factor is based on the Alameda Countywide Travel Demand Model Final Documentation Report (Kittelson & Associate, 2019) and are as follows:

- Heavy Trucks – PCE factor is 2.0.
- Light/Medium Trucks – PCE factor is 1.5.

5.12.2.2 Significance Criteria

The significance criteria have been developed using guidance provided in CEQA Appendix G (Title 14, California Code of Regulations [CCR], Section 15000 et seq.) and relevant local policies. Effects of the proposed Project on transportation and circulation will be considered significant if the following criteria are met:

1. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
2. Conflict or be inconsistent with CEQA guidelines Section 15064.3, Subdivision (b).
3. Substantially increase hazards due to a geometric design feature (for example, sharp curves or dangerous intersections) or incompatible uses (for example, farm equipment).
4. Result in inadequate emergency access.

5.12.2.3 Conflict with Plans and Policies

Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

5.12.2.3.1 Construction

Less-than-Significant Impact. Construction activities associated with the construction of the Project would be contained within the site and are not expected to result in closures of travel lanes or roadway segments, permanently alter public access roadways, create new public roadways that could substantially change the travel patterns of vehicles and bicycles on surrounding roadways, or conflict with the policies and plans regarding bicycle facilities. There are no transit or pedestrian facilities adjacent to the Project site that would be affected by Project-generated construction traffic. There are no bike lanes along Altamont Pass Road and Grant Line Road to the Project site. The rural roadways in the study area are generally used for recreational and inter-regional travel that typically occur outside of the typical weekday peak commute periods and on weekends.

Construction traffic would increase in traffic on Altamont Pass Road, Grant Line Road, and I-580. However, the construction activities would be temporary and short-term, and the traffic increases would end when construction activities are completed. This temporary increase in traffic would be managed through implementation of a Transportation Management Plan (TMP), as further discussed in Section 5.12-5, Mitigation Measures. Implementation of a construction TMP is a standard practice and would reduce any short-term operational effects of construction traffic. Strategies in the TMP would focus on safety related to truck traffic to and from the site, but the 16 trips per day will have minimal effect on traffic operations, and extensive strategies will not be needed.

Therefore, the Project would not conflict with a plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. The Project would result in less-than significant impacts to the performance of the local circulation system.

5.12.2.3.2 Operations and Maintenance

Less-than-Significant Impact. The permanent operation (or O&M) of the Project is expected to have nominal operational vehicular trips associated with routine maintenance and upkeep of facilities. Therefore, the number of permanent trips (one to two workers arriving and departing the Project area per month) associated with the Project are not expected to affect the study area transportation network. The roadway conditions in the Project vicinity would not substantially differ from existing conditions. Therefore, the Project would not conflict with applicable programs, plans, ordinances, or policies addressing the circulation system, and impacts would be less than significant.

5.12.2.4 Conflict with CEQA Guidelines

Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?

Section 15064.3(b) of the CEQA Guidelines provides guidance on determining significance of transportation impacts and focuses on VMT. Pursuant to SB 743 (Steinberg 2013), the focus in evaluating transportation impacts under CEQA has shifted from traffic delays (that is, LOS) to total VMT. The intent of SB 743 is to align transportation impacts under CEQA with the state's overall goals of increasing long-term sustainability by encouraging infill development, increasing reliance on mass transit, and reducing greenhouse gas emissions. The VMT analysis focuses on automobile and light-duty truck trips and excludes heavy truck trips.

5.12.2.4.1 Construction VMT Impacts

Less-than-Significant Impact. Although the proposed Project would increase VMT during the construction phase because of trips made by construction workers, these increases are temporary in nature and localized. Project construction is not anticipated to result in long-term, permanent changes to the surrounding vehicle transportation system. Therefore, the proposed Project is not anticipated to conflict or be inconsistent with CEQA Guidelines Section 15064.3(b), and impacts would be less than significant.

5.12.2.4.2 Operations and Maintenance VMT Impacts

Less-than-Significant Impact. Based on OPR guidance, projects that generate fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact. The operation of the Project would require up to two full-time employees entering the Project site once a month, and therefore would not generate substantive VMT.

Therefore, VMT impacts related to Project operations would be less than significant.

5.12.2.5 Design Hazards or Incompatible Uses

Substantially increase hazards due to geometric design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less-than-Significant Impact. The Project does not include changes to existing roadways during construction, operations, and maintenance. All construction activities are anticipated to occur onsite and outside of the public right-of-way. Access will be on an existing access road along Altamont Pass Road. Some degradation in roadway pavement condition would be possible and may result in an increase in roadway hazards from heavy vehicle trips associated with Project construction. With the implementation of a TMP, pavement degradation in roadway condition caused by Project construction traffic would be restored based on the procedures established in the TMP. The construction contractor would work with Alameda County and Caltrans to prepare a schedule and mitigation plan for the roadways along the construction routes in accordance with the procedures established by the TMP.

Truck trips, including delivery of hazardous materials and removal of wastes, pose potential hazards for the public. However, the transporter will be required to obtain a Hazardous Material Transportation License in accordance with CVC Section 32105 and will be required to follow appropriate safety procedures when transporting and handling such materials.

Therefore, with the implementation of a TMP and adhering to appropriate safety requirements, the proposed Project would not result in a substantial increase in roadway hazards. This impact would be less than significant.

5.12.2.6 Inadequate Emergency Access

Result in inadequate emergency access?

Less-than-Significant Impact. The Project does not include changes to existing roadways during construction, operations, and maintenance. All construction activities are anticipated to occur onsite and outside of the public right-of-way. No closures of travel lanes in the public right-of-way or driveway closures are anticipated that would impact emergency access or response plans.

During construction, emergency vehicles would have right-of-way over construction vehicles. The additional traffic associated with construction trips during the AM and PM peak hours may potentially delay emergency response vehicles. However, this delay would be minimal as all vehicles would yield to emergency response vehicles. As part of the TMP, the contractor would follow standard construction practices and ensure that adequate access is always maintained for all users, including coordinating with local emergency response providers (local police, fire, and medical dispatch) regarding proposed construction activities. Therefore, the proposed Project would not result in inadequate emergency access. This impact would be less than significant.

5.12.3 Transport of Hazardous Materials

The Project would involve the transport of hazardous materials to and from the site during construction and operation. Hazardous materials used for construction will be typical of most construction projects of this type. Materials will include small quantities of gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, dust palliatives, and welding materials/supplies. Hazardous materials used during operation of the facility include mineral oil stored in the transformers, cleaning products, dielectric fluids, and lithium-ion batteries.

The Project would adhere to all applicable federal, state (U.S. Environmental Protection Agency, Caltrans, California Highway Patrol [CHP], and California State Fire Marshal), and local regulations, including the Hazardous Materials Transportation Act of 1974, to manage and prevent potential impacts caused by transporting hazardous materials. Materials would only be mobilized along approved transportation routes (for example, I-580), thereby avoiding sensitive receptors to the extent practicable. Compliance with applicable regulations would ensure that impacts from the transportation of hazardous materials would be less than significant.

Section 5.5, Hazardous Materials Handling, describes in detail the types and quantities of hazardous materials that will be used at the site. Section 5.14, Waste Management, describes the frequency of disposal.

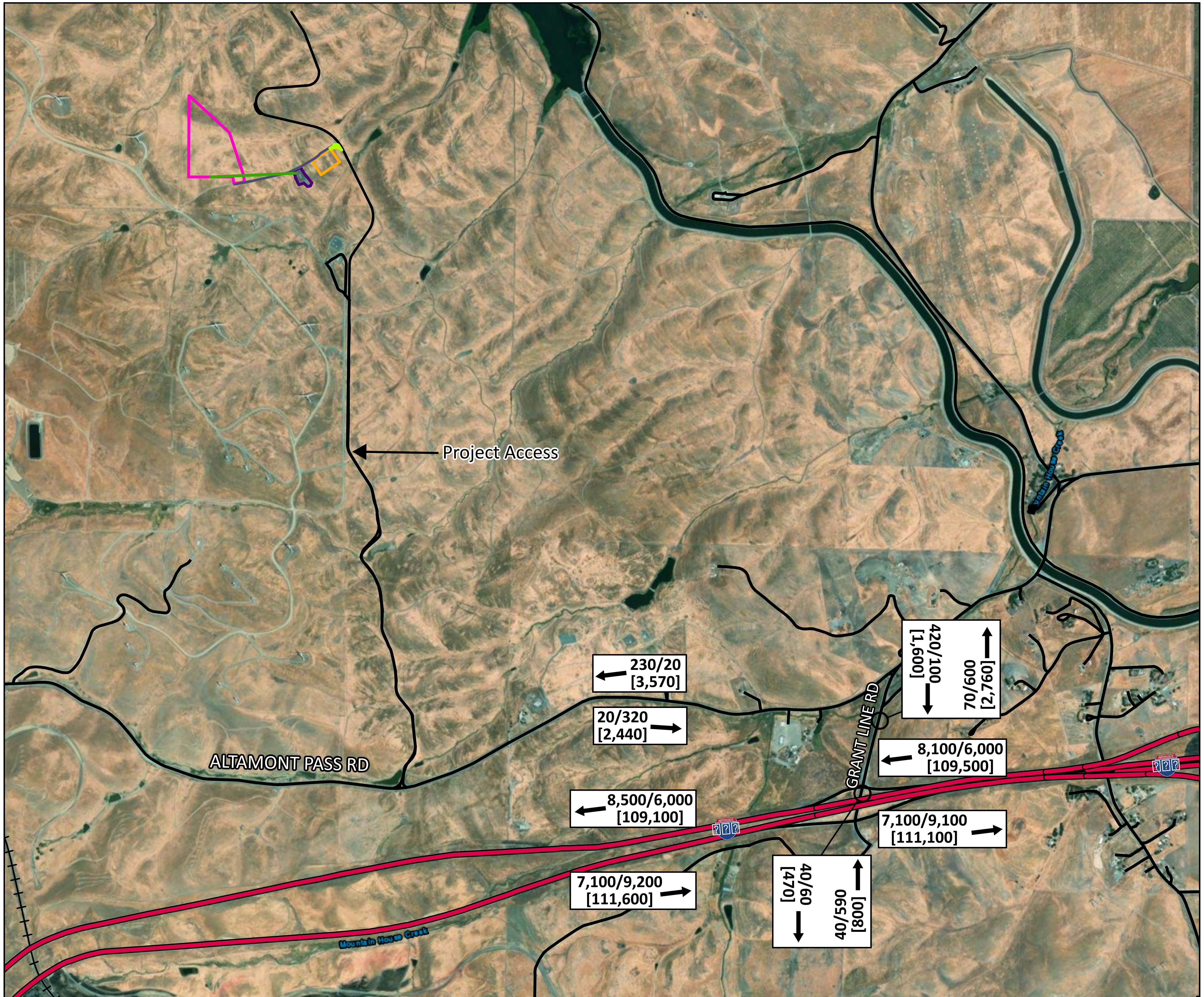
5.12.4 Cumulative Effects

A cumulative impact refers to a proposed Project’s incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed Project (Public Resources Code Section 21083; Title 14 CCR, Sections 15064[h], 15065[c], 15130, and 15355). The focus of the cumulative impact assessment is identifying the Project’s cumulative effects during construction. During permanent operation (or O&M), the Project is expected to have nominal vehicle trips associated with routine maintenance and upkeep of facilities.

A complete list of cumulative projects is provided in Section 2.5, Cumulative Impacts. The timing of these cumulative projects varies and is often uncertain. Based on review of available information (that is, geographic location and anticipated construction schedule) of the cumulative projects, it was determined that there were no cumulative projects that would have a peak construction period that overlaps with the Project construction; therefore, no additional cumulative projects were added in the analysis. Construction for adjacent cumulative projects such as the Sand Hill Wind Project, Altamont Pass Wind Resource Area Repower Project, and Rooney Ranch Wind Repowering Project were assumed to be completed prior to the construction of the Viracocha Hill BESS. Similarly, construction of nearby projects (such as the Grant Line

Solar Project and Jess Ranch Compost Facility Project) that could potentially add traffic to the study segments are also assumed to be completed prior to the construction of the Viracocha Hill BESS.

The cumulative (2027) condition represents a short-term horizon period (less than 5 years) when the Project is under construction and capturing general growth of the area. The cumulative peak hour traffic forecast for the Year 2027 have been developed based on the 2019 Alameda Countywide Travel Demand Model (based on the Plan Bay Area 2040). Year 2027 traffic volumes were estimated by interpolating the travel demand model results for the base year (2020) and future year (2040) model. Year 2027 cumulative average daily, AM, and PM peak hour segment traffic volumes on the freeway mainline and local arterial roadways are illustrated on Figure 5.12-7.



Legend

- Railroad
- Road
- Interstate
- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)
- 90/90 [196] Weekday AM Peak Hr/PM Peak Hr Volume [Average Daily Traffic Volume]

Source:
1) ESRI Aerial Images

0 0.5 1
Miles

Figure 5.12-7
Year 2027 Cumulative Traffic Volumes (PCE)
Viracocha Hill BESS Project
Alameda County, California

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5.12.4.1 Level of Service Analysis – Year 2027 Cumulative Plus Project Construction Conditions

Consistent with CEC requirements, a LOS analysis was conducted at the study segments with the Project-added construction traffic. Construction trip generation estimates were added to the year 2027 cumulative volumes along the study roadways to develop the Year 2027 Cumulative plus Project Construction condition, as shown on Figure 5-12-8.

Table 5.12-7 is a summary of the ADT volumes with added Project construction traffic at the study segments. The added daily Project construction volumes at the study segments range from 49 to 98 vehicle trips during the weekday AM and PM peak hours. With the added Project construction traffic, the year 2027 Cumulative ADT volumes increase by 0.04 to 10%.

Table 5.12-7. Year 2027 Cumulative with Project Construction Traffic Roadway Segment Average Daily Traffic (ADT)

Roadway	Location		Year 2027 Existing ADT (PCE)	Total Project ADT (PCE)/ % Change
I-580	West of Grant Line Road	EB	111,600	49 / 0.04 %
		WB	109,100	49 / 0.04 %
	East of Grant Line Road	EB	111,100	49 / 0.04 %
		WB	109,500	49 / 0.04 %
Altamont Pass Road	West of Grant Line Road	EB	2,440	98 / 4%
		WB	3,570	98 / 3%
Grant Line Road	Altamont Pass Road and I-580 WB ramps	NB	2,760	98 / 4%
		SB	1,600	98 / 6%
	I-580 WB ramps and I-580 EB ramps	NB	800	49 / 6%
		SB	470	49 / 10%

Table 5.12-8 summarizes the peak hour traffic volumes and V/C ratios for year 2027 cumulative with Project construction traffic. The added Project construction volumes at the study segments range from 4 to 86 vehicle trips during the AM and PM peak hours.

On I-580, added Project construction trips range from four to 43 trips during the AM and PM peak hours. In the existing peak direction of traffic (generally westbound AM and eastbound PM), Project construction traffic is added to an already degraded segment (operating at near or over capacity; LOS E or F). However, there is no clear direction about whether adding trips (particularly a small number) to a segment already operating at LOS E or F would constitute an impact. In the non-peak direction of traffic (generally eastbound AM and westbound PM), the I-580 study segments is expected to operate at LOS D or better with the Project construction traffic. On Grant Line Road and Altamont Pass Road, added Project construction trips range from four to 86 trips during the AM and PM peak hours. As shown in the table, the study segments on the arterial roadways are expected to operate at LOS B or better with Project construction traffic. Therefore, construction-generated trips are not expected to change operations to worse than LOS E on I-580 (or worse LOS prior to construction) and LOS D on the arterial roadways, so the Project will be consistent with Plan Policy 193 from the ECAP.

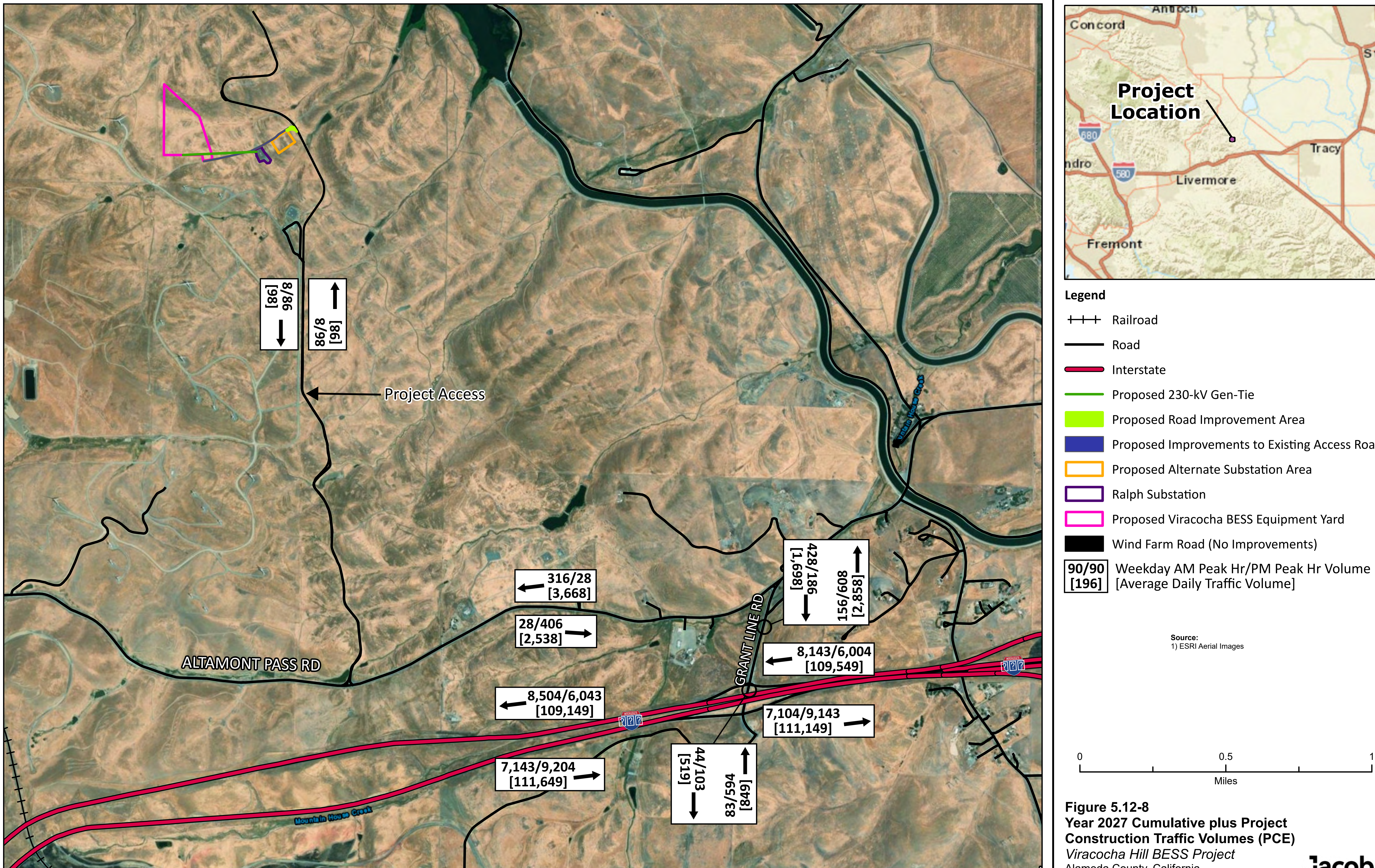

Figure 5.12-8
Year 2027 Cumulative plus Project Construction Traffic Volumes (PCE)
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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Table 5.12-8. Year 2027 Cumulative with Project Construction Traffic Roadway Segment Peak Hour LOS Analysis Summary

Roadway	Location		No. of Lanes	Road/Area Type	Capacity (PCE per hour)	Year 2027 Cumulative PCE[1]						Project Construction		Year 2027 Cumulative + Project Construction PCE[1]					
						AM Vol	AM V/C	AM LOS	PM Vol	PM V/C	PM LOS	AM Vol	PM Vol	AM Vol	AM V/C	AM LOS	PM Vol	PM V/C	PM LOS
I-580	West of Grant Line Road	EB	4	Freeway/ Rural	8,600	7,100	0.83	D	9,200	1.07	F	43	4	7,143	0.83	D	9,204	1.07	F
		WB	4	Freeway/ Rural	8,600	8,500	0.99	E	6,000	0.70	C	4	43	8,504	0.99	E	6,043	0.70	C
	East of Grant Line Road	EB	4	Freeway/ Rural	8,600	7,100	0.83	D	9,100	1.06	F	4	43	7,104	0.83	D	9,143	1.06	F
		WB	5	Freeway/ Rural	10,750	8,100	0.75	C	6,000	0.56	B	43	4	8,143	0.76	C	6,004	0.56	B
Altamont Pass Road	West of Grant Line Road	EB	1	Collector/ Rural	950	20	0.02	A	320	0.34	A	8	86	28	0.03	A	406	0.43	A
		WB	1	Collector/ Rural	950	230	0.24	A	20	0.02	A	86	8	316	0.33	A	28	0.03	A
Grant Line Road	Altamont Pass Road and I-580 WB ramps	NB	1	Collector/ Rural	950	70	0.07	A	600	0.63	B	86	8	156	0.16	A	608	0.64	B
		SB	1	Collector/ Rural	950	420	0.44	A	100	0.11	A	8	86	428	0.45	A	186	0.20	A
	I-580 WB ramps and I-580 EB ramps	NB	1	Collector/ Rural	950	40	0.04	A	590	0.62	B	43	4	83	0.09	A	594	0.63	B
		SB	1	Collector/ Rural	950	40	0.04	A	60	0.06	A	4	43	44	0.05	A	103	0.11	A

Notes:
1 PCE factor is based on the Alameda Countywide Travel Demand Model Final Documentation Report (Kittelson & Associates 2019) and are as follows:

- Heavy Trucks – PCE factor is 2.0.
- Light/Medium Trucks – PCE factor is 1.5.

5.12.4.2 Cumulative Construction Effects

Project construction activities would be contained in the Project site and are not expected to result in closures of travel lanes or roadway segments, permanently alter public access roadways, create new public roadways that could substantially change the travel patterns of vehicles and bicycles on surrounding roadways. Access will be on an existing access road along Altamont Pass Road. There are no transit or pedestrian facilities adjacent to the Project site that would be affected by Project-generated construction traffic. There are no bike lanes along Altamont Pass Road and Grant Line Road to the Project site.

Construction traffic would increase traffic on Altamont Pass Road, Grant Line Road, and I-580. However, the construction activities would be temporary and short-term, and the traffic increases would end when construction activities are completed. This temporary increase in traffic would be managed through implementation of a TMP, as further discussed in Section 5.12-5, Mitigation Measures. Implementation of a construction TMP is a standard practice and would reduce any short-term operational effects of construction traffic. Therefore, the Project would not contribute to a cumulatively considerable impact. Impacts would be less than significant.

5.12.4.3 Cumulative Operations and Maintenance Effects

The Project is expected to have nominal operational vehicular trips associated with routine maintenance and upkeep of facilities. The number of permanent trips (1 to 2 workers arriving and departing the Project area per month) are not expected to affect the proposed bicycle route or the study area roadway network. The roadway conditions in the Project vicinity would not substantially differ from existing conditions. The Project would not generate a significant number of trips nor cause a substantial amount of VMT. The Project does not include changes to existing roadways during O&M. Therefore, the Project would not contribute to a cumulatively considerable impact.

5.12.5 Mitigation Measures

To address the potentially significant impact on roadway hazards and to ensure that the Project's contribution to cumulative effects would remain less than significant on the transportation system, the construction contractor would be required to prepare a TMP, also known as a construction traffic control plan and construction management plan. The TMP would address traffic control, construction traffic scheduling, carpooling, heavy equipment and materials delivery, street or lane closures, signage, and lighting.

The TMP also would include procedures to restore damages to roadway conditions caused by Project construction traffic. The construction contractor would work with Alameda County and Caltrans to prepare a schedule and mitigation plan for the roadways along the construction routes in accordance with the procedures established by the TMP.

With implementation of the TMP, the Project's impacts and cumulative effects on the transportation system would be less than significant.

5.12.6 Laws, Ordinances, Regulations, and Standards

LORS related to traffic and transportation are summarized in the following subsections. Table 5.12-9 summarizes all applicable federal, state, and local LORS and administering agencies, and describes how the applicant will comply with all LORS pertaining to traffic and transportation impacts.

Table 5.12-9. Laws, Ordinances, Regulations, and Standards for Traffic and Transportation

LORS	Requirements/Applicability	Administering Agency	Sections Explaining Conformance
Title 49 CFR, Sections 171–177 and 350–399	Requires proper handling and storage of hazardous materials during transportation.	U.S. Department of Transportation and Caltrans	Project and transportation will comply with all standards for the transportation of hazardous materials (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).
Title 14 CFR, Section 77.13(2)(i), 77.17, 77.21, 77.23, and 77.25	Requires an applicant to notify the FAA of the construction or alteration of structures within a certain distance from an airport to avoid air navigation conflicts.	U.S. Department of Transportation and FAA	No airports are within 20,000 feet of the Project site; therefore, this requirement is not applicable (Section 5.12.1.6, Air Traffic).
CVC Sections 13369, 15275, and 15278	Addresses the licensing of drivers and classifications of licenses required for the operation of particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are required.	Caltrans	The Project will conform to these sections in the CVC (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).
CVC Section 25160 et seq.	Addresses the safe transport of hazardous materials.	Caltrans	The Project will conform to these sections in the CVC (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).
CVC Sections 2500–2505	Authorizes the issuance of licenses by the Commissioner of the CHP for the transportation of hazardous materials including explosives.	Caltrans	The Project will conform to these sections in the CVC (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).

LORS	Requirements/Applicability	Administering Agency	Sections Explaining Conformance
CVC Section 31300 et seq.	Requires transporters to meet proper storage and handling standards for transporting hazardous materials on public roads.	Caltrans	Transporters will comply with standards for transportation of hazardous materials on state highways during construction and operations. The Project will conform to CVC Section 31303 by requiring that shippers of hazardous materials use the shortest route possible to and from the site (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).
CVC Sections 31600–31620	Regulates the transportation of explosive materials.	Caltrans	The Project will conform to CVC §31600 – 31620 (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).
CVC Sections 32000–32053	Regulates the licensing of carriers of hazardous materials and includes noticing requirements.	Caltrans	The Project will conform to CVC §31600 – 31620 (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).
CVC Sections 32100–32109 and 32105	Establishes special requirements for the transportation of substances presenting inhalation hazards and poisonous gases. Requires that shippers of inhalation or explosive materials contact the CHP and apply for a Hazardous Material Transportation License.	Caltrans	The Project will conform by requiring shippers of inhalation or explosive materials to contact the CHP and obtain a Hazardous Materials Transportation License (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).
CVC Sections 34000–34121	Establishes special requirements for the transportation of flammable and combustible fluids over public roads and highways.	Caltrans	The Project will conform to CVC §§34000 – 34121 (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).
CVC Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5–7, 34506, 34507.5 and 34510–11	Regulates the safe operation of vehicles, including those used to transport hazardous materials.	Caltrans	The Project will conform to these sections in the CVC (Section 5.12.3, Section 5.12.2.4, Section 5.5 [Hazardous Materials Handling], and Section 5.14 [Waste Management]).

LORS	Requirements/Applicability	Administering Agency	Sections Explaining Conformance
S&HC Sections 660, 670, 1450, 1460 et seq., 1470, and 1480	Regulates right-of-way encroachment and the granting of permits for encroachments on state and county roads.	Caltrans	The Project will conform to these sections in the S&HC (Section 5.12.8).
S&HC Sections 117, 660–711	Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery.	Caltrans	Encroachment permits will be obtained by transporters, as required (Section 5.12.8).
CVC Sections 35780; S&HC Sections 660–711	Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	Caltrans	Transportation permits will be obtained by transporters for all overloads, as required (Section 5.12.8).
CVC Sections 35550–35559	Regulates weight and load limitations.	Caltrans	The Project will conform to these sections in the CVC (Section 5.12.8).
CEQA	Requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of the Project and to reduce environmental impacts to the extent feasible.	Caltrans	The Project will conform with the CEQA requirements through the CEC Opt-In Application process.
California SB 743	Required OPR to amend the CEQA Guidelines to provide an alternative to the LOS metric for evaluating transportation impacts. Under the new guidelines, LOS or vehicle delay, is no longer considered an environmental impact under CEQA. The new Section 15064.3 identifies VMT as the most appropriate measure of transportation impacts effective July 1, 2020.	Caltrans	The Project will conform with SB 743. The Project would have a less-than-significant impact on VMT due to the temporary nature of construction related VMT and the minimal number of permanent operations-related trips. (Section 5.12.2.3)

LORS	Requirements/Applicability	Administering Agency	Sections Explaining Conformance
Caltrans Transportation Impact Study Guide	Per the 2020 Transportation Impact Study Guide, Caltrans' primary review focus is VMT, replacing LOS as the metric used in CEQA transportation analyses. Caltrans recommends use of OPR's recommended thresholds and guidance on methods of VMT assessment.	Caltrans	The Project will conform with the Caltrans Transportation Impact Study Guide. The Project would have a less-than-significant impact on VMT due to the temporary nature of construction- related VMT and the minimal number of permanent operations-related trips. (Section 5.12.2.3)
Alameda CTC Congestion Management Plan	The Alameda CTC is in the process of transitioning to VMT as the primary metric for traffic impacts. Until this transition is complete, the Alameda Congestion Management Plan minimum standard for monitored roads and freeways in the Congestion Management Plan network of LOS E remains the agency's transportation metric. I-580 is part of the Congestion Management Plan Road System.	Alameda County	The Alameda CTC Congestion Management Plan standards are focused on traffic impacts associated with permanent conditions, and do not apply to construction activities such as the Project, in which there are temporary traffic increases that are eliminated once construction is completed. (Section 5.12.2)
Alameda County ECAP Policies 180, 183-185, 190, 193, 194	Provide LOS requirements for county roadways, as well as policies for reducing congestion, integrating bicycle, pedestrian, and transit into the county's transportation network.	Alameda County	During construction, the Project would not conflict with the LOS requirement for the county roadways under existing plus project conditions. The impact would be less than significant. (Sections 5.12.2 and 5.12.4)
Alameda County Bicycle and Pedestrian Master Plan	Provides policies, goals, an implementable bicycle network, pedestrian network recommendations to improve safety and connectivity, and support programs for the populated communities of West County and the rural communities of East County.	Alameda County	The Project site's circulation system does not contain pedestrian, bicycle, or public transportation. Thus, the Project would be consistent with the Alameda County Bicycle and Pedestrian Master Plan. (Section 5.12.2.2)

Notes:

CFR = Code of Federal Regulations

FAA = Federal Aviation Administration

S&HC = California Streets and Highways Code

5.12.6.1 Federal LORS

- Title 49 CFR 171–177 governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.
- Title 49 CFR 350-399 and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways.
- Title 49 CFR 397.9, the Hazardous Materials Transportation Act of 1974, directs the U.S. Department of Transportation to establish criteria and regulations for the safe transportation of hazardous materials.

5.12.6.2 State LORS

- CVC Sections 13369, 15275, and 15278 address the licensing of drivers and classifications of licenses required to operate particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are addressed.
- CVC Sections 25160 et seq. address the safe transport of hazardous materials.
- CVC Sections 2500–2505 authorize the issuance of licenses by the Commissioner of the CHP to transport hazardous materials, including explosives.
- CVC Sections 31300 et seq. regulate the highway transportation of hazardous materials, routes used, and restrictions. CVC Section 31303 requires hazardous materials to be transported on state or interstate highways that offer the shortest overall transit time possible.
- CVC Sections 31600–31620 regulate the transportation of explosive materials.
- CVC Sections 32000–32053 regulate the licensing of carriers of hazardous materials and include noticing requirements.
- CVC Sections 32100–32109 establish special requirements for the transportation of substances presenting inhalation hazards and poisonous gases. CVC Section 32105 requires shippers of inhalation hazards or explosive materials to contact the CHP and apply for a Hazardous Material Transportation License. Upon receiving this license, the shipper will obtain a handbook specifying approved routes.
- CVC Sections 34000–34121 establish special requirements for transporting flammable and combustible fluids over public roads and highways.
- CVC Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5–7, 34506, 34507.5, and 34510–11 regulate the safe operation of vehicles, including those used to transport hazardous materials.
- California S&HC, Sections 660, 670, 1450, 1460 et seq. 1470, and 1480 regulate right-of-way encroachment and granting of permits for encroachments on State and County roads.
- S&HC Sections 117 and 660–711 and CVC Sections 35780 et seq. require permits to transport oversized loads on county roads. S&HC Sections 117 and 660 to 711 require permits for any construction, maintenance, or repair involving encroachment on state highway rights-of-way. CVC Section 35780 requires approval for a permit to transport oversized or excessive loads over state highways.

- Caltrans weight and load limitations for state highways apply to all state and local roadways. The weight and load limitations are specified in CVC Sections 35550 to 35559. The following provisions from the CVC apply to all roadways and are therefore applicable to the Project:
  - **General Provisions**
    - The gross weight imposed upon the highway by the wheels on any axle of a vehicle shall not exceed 20,000 pounds; and the gross weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, shall not exceed 10,500 pounds.
    - The maximum wheel load is the lesser of the load limit established by the tire manufacturer, or a load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width.
  - **Vehicles with Trailers or Semi-trailers**
    - The gross weight imposed upon the highway by the wheels on any one axle of a vehicle shall not exceed 18,000 pounds; and the gross weight upon any one wheel, or wheels, supporting one end of an axle and resting upon the roadway, shall not exceed 9,500 pounds, except that the gross weight imposed upon the highway by the wheels on any front steering axle of a motor vehicle shall not exceed 12,500 pounds.
- California State Planning Law, Government Code Section 65302, requires each city and county to adopt a General Plan, consisting of seven mandatory elements, to guide its physical development. Section 65302(b) requires that a circulation element be one of the mandatory elements.
- All construction in the public right-of-way will need to comply with the "Manual on Uniform Traffic Control Devices" (Caltrans 2014; Federal Highway Administration 2009).
- CEQA requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of the Project and to reduce environmental impacts to the extent feasible. Appendix G of the CEQA Guidelines includes recommended criteria for evaluating potential impacts related to traffic and transportation.

  SB 743In 2013, the State of California passed SB 743, which was codified in PRC Section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (CCR, Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. Pursuant to PRC Section 21099(b)(1), the criteria for determining the significance of transportation impacts must "promote the reduction of [greenhouse gas] emissions, the development of multimodal transportation networks, and a diversity of land uses." (See adopted CEQA Guidelines Section 15064.3(b), Criteria for Analyzing Transportation Impacts). To that end, in developing the criteria, the OPR has proposed, and the California Natural Resources Agency has certified and adopted changes to the CEQA Guidelines that identify VMT as the most appropriate metric to evaluate a project's transportation impacts. With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by LOS and other similar metrics, no longer constitutes (in most cases) a significant environmental effect under CEQA. (PRC Section 21099(b)(3)). Alameda County is currently in the process of transitioning to the VMT metric.

5.12.6.3 Local LORS

This section reviews compliance with all relevant local LORS without regard to their applicability as a matter of law. These LORS include the following:

- Alameda County ECAP

  The ECAP contains goals and policies to maintain an efficient circulation network in the eastern portion of Alameda County. These goals include creating and maintaining a balanced multimodal transportation system, cooperating with other regional transportation planning agencies, integrating pedestrian infrastructure into the transportation system, and reducing East County traffic congestion. Policy 193 within the ECAP establishes thresholds for roadway LOS on intercity arterials (LOS D or better) and major arterial segments within unincorporated areas and those CMP-designated roadways such as I-580 (LOS E or better) within unincorporated areas significantly affected by a project. If those thresholds are exceeded, a Deficiency Plan for the affected roadways shall be prepared. Alameda County has not established designated local truck routes nor adopted specific policies regarding management of construction activities. In general, county planning and policy guidance do not discuss temporary impacts from a construction phase. Instead, they are focused on sustained impacts from development trips.

- Alameda CTC

  The Alameda CTC is a joint powers authority that plans, funds, and delivers transportation programs and projects that expand access and improve mobility to foster a vibrant and livable Alameda County. It was formed in 2010 from the merger of the Alameda County Transportation Improvement Authority and the Alameda County Congestion Management Agency.

- Alameda County CMP

  California law requires urban areas to develop and biennially update a CMP, a plan that describes strategies to assess and monitor the performance of the county's multimodal transportation system, addresses congestion, and improves the performance of a multimodal system, and integrates transportation and land use planning. Fundamentally, the CMP is aligned with other long-range planning efforts including the Countywide Transportation Plan and the most recent Regional Transportation Plan and Sustainable Communities Strategy (Plan Bay Area 2040). The Alameda CTC CMP specifically describes strategies to monitor and improve the performance of every mode of travel in Alameda County. This includes monitoring congestion, transit performance, bicycle and pedestrian activity throughout the county, and major new land use developments. The current CMP was adopted in March 2022 reporting for Year 2021. It is noted that Alameda CTC CMP standards and travel demand measures are focused on traffic impacts associated with future development, and as such do not apply to construction activities such as the Project in which there are temporary, short-term traffic increases that are eliminated once construction is completed.

5.12.7 Agencies and Agency Contacts

Table 5.12-10 lists the agency contacts related to traffic and transportation.

Table 5.12-10. Agency Contacts for Traffic and Transportation

Issue	Agency	Contact
Transportation Permit for Oversized Loads	Caltrans	Caltrans Transportation Permits Issuance Branch 1120 N Street Sacramento, CA 95814 (916) 322-1297 Oversize.Overweight.Permits@dot.ca.gov
Transportation Permit for Oversized or Overweight Loads	Alameda County	Alameda County Public Works Agency 399 Elmhurst Street, Hayward, CA 94544 510-670-5480 info@acpwa.org

Issue	Agency	Contact
Hazardous Material Transportation License	CHP	Hazardous Material Licensing P.O. Box 942898 Sacramento, CA 942898-0001 (916) 843-3400 Email form available at: http://www.chp.ca.gov/prog/email.cgi
Safety Permits	Federal Motor Carrier Safety Administration	California Office 1325 J Street, Suite 1540 Sacramento, CA 95814 (916) 930-2760 Fax: (916) 930-2770 Email contact depends on the nature of the hazardous material hauled.

5.12.8 Permits and Permit Schedule

Table 5.12-11 lists the permits related to traffic and transportation and the permit schedule. The vehicles used to transport heavy equipment and construction materials will require transportation permits when they exceed the size, weight, width, or length thresholds set forth in Section 35780 of the CVC, Sections 117 and 660-711 of the California State Highway Code, and Sections 1411.1 to 1411.6 of the CCR. Affected vehicles will be required to obtain transportation permits from Caltrans and Alameda County, or from any other affected agency.

Transport route arrangements would be required with Caltrans and CHP officials for permitting and escort, as applicable. Transportation of hazardous materials to and from the Project will be conducted in accordance with CVC Section 31303.

Table 5.12-11. Permits and Permit Schedule for Traffic and Transportation

Permit	Agency Contact	Schedule
Single/annual-trip transportation permit for oversized loads and oversized vehicles	Caltrans Transportation Permits Issuance Branch (916) 322-4958 Oversize.Overweight.Permits@dot.ca.gov	Obtain when necessary, 2-hour processing time (single trip) to 2 weeks (annual trip).
Hazardous materials transportation license	CHP Hazardous Material Licensing Program (916) 843-3400	Obtain when necessary, approximately 2-week processing time.
Transportation Move permit for moving any extra-legal load that is overweight or oversized	Alameda County Public Works 510-670-5480	Obtain when necessary, issuance within 1 to 2 days.
Encroachment Permit for Alameda County	Alameda County Public Works 510-670-5480	Obtain when necessary, issuance within 1 to 2 days.

Permit	Agency Contact	Schedule
Safety Permit	Federal Motor Carrier Safety Administration California Office (916) 930-2760 Fax: (916) 930-2770 Email contact depends on the nature of the hazardous material hauled.	Obtain when necessary, applications can be processed in 1-2 working days.

5.12.9 References

Alameda County. 2019. Alameda County Bicycle and Pedestrian Master Plan. https://www.acpwa.org/acpwa-assets/docs/programs-services/streets-roads/2019_Bicycle_and_Pedestrian_Master_Plan_FINALSljs.pdf.

Alameda County Community Development Agency. 1993. East County Area Plan. https://www.acgov.org/cda/planning/generalplans/documents/ECAPDraftEIRJune1993.pdf.

Alameda County Transportation Commission. 2019. Alameda Countywide Travel Demand Model. https://www.alamedactc.org/planning/congestion-management-program.

Alameda County Transportation Commission. 2022. Alameda County Multimodal Monitoring Report. https://www.alamedactc.org/planning/congestion-management-program.

Alameda County Transportation Commission. 2023a. Alameda County Performance Report. https://www.alamedactc.org/planning/congestion-management-program.

Alameda County Transportation Commission. 2023b. Alameda County Congestion Management Program (CMP). https://www.alamedactc.org/planning/congestion-management-program.

California Department of Transportation (Caltrans). 2020. Vehicle Miles Traveled-Focused Transportation Impact Study Guide. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-05-20-approved-vmt-focused-tisg-a11y.pdf.

California Department of Transportation. (Caltrans). 2022a. Traffic Data Branch. 2022 Traffic Volumes on the California State Highway System. http://traffic-counts.dot.ca.gov.

California Department of Transportation (Caltrans). 2022b. Traffic Data Branch. 2022 Annual Average Daily Truck Traffic on the California State Highway System. http://traffic-counts.dot.ca.gov.

Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG). 2017. Plan Bay Area 2040. https://files.mtc.ca.gov/library/pub/30060.pdf.

OPR (California Governor's Office of Planning and Research). 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. December 2018. Accessed December 2024. https://lci.ca.gov/ceqa/sb-743/.

5.13 Visual Resources

Section 5.13 Visual Resources is not included in this Application and will be submitted in second quarter 2025.

5.14 Waste Management

This section discusses the potential effects on human health and the environment from nonhazardous and hazardous waste generated at the proposed Viracocha Battery Energy Storage System Project (Viracocha BESS or Project). Section 5.14.1 describes Project site investigations that have determined whether past activities have contaminated the site and the future waste streams that would be generated by the Project. Section 5.14.2 describes the Project's environmental analysis in terms of waste managed and waste disposal sites used. Section 5.14.3 discusses potential cumulative effects. Section 5.14.4 describes proposed mitigation measures. Section 5.14.5 presents laws, ordinances, regulations, and standards (LORS) that apply to the generated waste. Section 5.14.6 describes agencies that have jurisdiction over the generated waste and provides a list of agency contacts. Section 5.14.7 describes permits required for generated waste and a schedule for obtaining those permits. Section 5.14.8 provides the references used to prepare this section.

5.14.1 Affected Environment

This section discusses the condition of the approximately 14-acre Project site. Additionally, this section identifies the various nonhazardous and hazardous waste streams for Project construction and operation.

The Project consists of a battery energy storage system (BESS) facility and associated infrastructure, including a 90.7-Megawatt, and up to 362.8-Megawatt-per-hour BESS project in Alameda County, California, adjacent to the proposed Sand Hill Wind Repower Project. The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

5.14.1.1 Site Investigations

A Phase I Environmental Site Assessment (ESA) was conducted in December 2024 by Jacobs for the Project site (Jacobs 2025) (Appendix 5.14A). The ESA was conducted in accordance with methods prescribed by the American Society for Testing and Materials document entitled “Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process (Designation: E 1527-21).”

The Phase I ESA report identified no Recognized Environmental Conditions (RECs) in the Project or study area.

5.14.1.2 Project Waste Generation

Wastewater, nonhazardous waste, and hazardous waste will be generated at the Project site during facility construction and operation.

5.14.1.2.1 Construction Phase

During construction, the primary waste generated will be nonhazardous waste. However, some hazardous waste will also be generated. All the hazardous wastes will be generated at the Project site. The types of waste and their estimated quantities are described in the following section and identified in Table 5.14-1.

Nonhazardous Solid Waste. The following nonhazardous waste streams could potentially be generated from construction of the Project:

- **Paper, Wood, Glass, and Plastics:** Over an estimated 14-month construction period, approximately 35 tons of paper, wood, glass, and plastics will be generated from packing materials, waste lumber, insulation, and empty nonhazardous chemical containers. The waste will be placed in onsite dumpsters. These wastes will be recycled where practical. Waste that cannot be recycled will be disposed of periodically at a Class II or III landfill.
- **Concrete:** Approximately 20 tons of excess concrete will be generated during construction of the Project. Waste will be recycled where practical, and nonrecyclable waste will be deposited in a Class III landfill.
- **Miscellaneous Waste:** Miscellaneous waste such as batteries, containers, solvents, and other waste will be recycled, sent to the vender for reconditioning, or disposed of at an appropriate facility, depending on the nature of the material (specific facility requirements are provided in Table 5.14-1).
- **Metal:** Over an estimated 14-month construction period approximately 21.5 tons of metal, including steel from welding/cutting operations, packing materials, and empty nonhazardous chemical containers, as well as aluminum waste from packing materials and electrical wiring, will be generated during construction. Waste will be recycled where practical, and nonrecyclable waste will be deposited in a Class III landfill.

Table 5.14-1. Potential Wastes Generated during Construction

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Scrap wood, steel, plastic, paper, etc.	Construction	Normal refuse/ Universal Waste	5,000 pounds per month	Nonhazardous	Recycle and/or dispose of at a Class II or III landfill
Scrap metal	Construction	Parts, wire, etc.	20 tons per year[a]	Nonhazardous	Recycle and/or dispose of at a Class II or III landfill
Concrete waste	Construction	Solids	20 tons	Nonhazardous	Recycle and/or dispose of at a Class II or III landfill
Empty liquid material containers	Construction	Drums, containers, totes	50 containers	Nonhazardous solids	Containers <5 gallons will be disposed of as normal refuse. Containers>5 gallons will be returned to vendors for recycling or reconditioning.
Spent welding materials (welding rods, wire, grinding wheels, etc.)	Construction	Solids	100 pounds per month[b]	Hazardous	Recycle with vendors or dispose at a Class I landfill if hazardous.

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Waste oil filters	Construction equipment and vehicles	Solids	10 pounds per month[c]	Nonhazardous	Recycle at a permitted TSDF
Oily rags, oil sorbent	Cleanup of small spills	Hydrocarbons	10 pounds per month	Hazardous	Recycle at a permitted TSDF
Solvents, paint, adhesives	Maintenance	Varies	10 pounds per month	Hazardous	Recycle at a permitted TSDF
Spent lead acid batteries	Construction equipment, trucks	Heavy metals	5 batteries per year	Hazardous	Store no more than 10 batteries (up to one year) then recycle offsite
Spent alkaline and lithium-ion batteries	Mobile and hand-held equipment (excluding Megapacks)	Metals	10 batteries per month	Universal Waste solids	Recycle or dispose of offsite at a Universal Waste Destination Facility
Sanitary waste	Portable toilet holding tanks	Sewage	600 gallons per day	Nonhazardous liquid	Remove by contracted sanitary service
Stormwater	Rainfall	Water	1.224 acre-feet[e] (from 10-year storm event)	Nonhazardous liquid	Discharge into natural waterways through ditches and culverts
Fluorescent, mercury vapor lamps	Lighting	Metals and PCBs	10 pounds per month	Universal Waste solids	Recycle or dispose offsite at a Universal Waste Destination Facility

Note:

[a] 30 cubic yards

[b] Containers include <5 gallon containers and 55 gallon drums or totes

[c] Assumes one oil change

[d] Assumes 2,500 gallons for each generator times 16 units

[e] Calculated from Alameda County Hydrology Manual for 10-year storm event Sanitary waste based on 8 portable toilets in use Concrete waste based on 10% of the approximate foundations for Tesla Megapack 2XL containers and associated equipment quantity of 108 containers

CTG = Controlled Techniques Guidance
RCRA = Resource Conservation and Recovery Act
TSDF = Treatment, Storage, and Disposal Facility

Wastewater. Wastewater generated during construction will include sanitary waste, stormwater runoff, and water from excavation dewatering during construction (due to depth of groundwater at the Project dewatering is unlikely to be necessary). These wastewaters could be classified as hazardous or nonhazardous depending on their chemical quality. Wastewater would be sampled and disposed of if found hazardous. Methods for disposing of nonhazardous wastewaters are identified in Section 5.14.4.1.

Hazardous Waste. Most hazardous waste generated during construction will consist of fluids, including lubricants and solvents. Other hazardous waste, such as oil filters, oily debris, welding materials and dried paint, may also be generated during construction.

5.14.1.2.2 Operation Phase

During Project operation, the primary waste generated will be nonhazardous waste. However, varying quantities of hazardous waste also will be generated periodically. The types of wastes and their estimated quantities are discussed in the following section.

Nonhazardous Waste. The Project will produce facility wastes typical of industrial operations and maintenance activities, such as broken or rusted metal, defective or malfunctioning equipment, electrical materials, empty containers, other miscellaneous solid waste, and typical refuse from the operations and maintenance (O&M) staff during monthly site visits. The quantity of all solid nonhazardous waste generated is estimated to be approximately 215 pounds per year. Where practical, this waste will be recycled; non-recyclable waste will be collected in a bin that will be collected and taken offsite regularly by the O&M staff and disposed of at a Class III landfill.

Hazardous Waste. Hazardous waste generated will include used lubricating oil, oily rags, batteries, and fire extinguishers. All hazardous materials will be used, stored, and disposed of in accordance with the manufacturer's specifications and consistent with applicable regulatory requirements. Workers will be trained to engage in safe work practices and to properly identify, handle, and dispose of any hazardous materials onsite.

Wastes potentially generated during operations at the facility are summarized in Table 5.14-2.

Table 5.14-2. Potential Wastes Generated during Project Operations

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Fluorescent tubes	Lighting of maintenance areas	Metals	10 pounds per year	Universal Waste solids	Recycle or dispose of offsite at Universal Waste Destination Facility
Electronic components	Distributed control system, BESS instruments and equipment	Metals	100 pounds per year	Universal Waste solids	Recycle with an approved facility
Oily rags and sorbents	Maintenance, wipe down of equipment, cleanup of small spills	Hydrocarbons and cloth	5 pounds per year	Hazardous	Recycle with an approved facility or disposal by certified oil recycler
Controlled waste streams	Batteries and fire extinguishers	Controlled substance	50 pounds per year	Hazardous	Recycle with an approved facility or disposal by a certified waste hauler

5.14.2 Environmental Analysis

5.14.2.1 Significance Criteria

A project may have a significant effect on the environment in terms of waste management if it meets the following criteria (California Environmental Quality Act Guidelines Section 15002[g], Appendix G):

- Be located on a site that is included on a list of hazardous materials sites (Cortese List) compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- Have solid waste disposal needs beyond the capacity of appropriate landfills to accommodate them.

The risks or hazards posed by the transportation of hazardous materials, including hazardous wastes, are described and analyzed in Section 5.5, Hazardous Materials Handling.

5.14.2.2 Cortese List

An examination of the California Department of Toxic Substances Control (DTSC) Hazardous Waste and Substances Site List (Cortese List) compiled pursuant to Government Code Section 65962.5 shows there are no sites currently on the list within 1,000 feet of the Project (DTSC 2024a). The closest listed site is the Altamont Landfill at 10840 Altamont Pass Road, Livermore, California, which is approximately 1.75 miles west of the proposed Project. Thus, it is highly unlikely that any impacts will result from Cortese-listed properties, nor will the Project present a significant hazard to the public or the environment.

5.14.2.3 Solid Waste Disposal

Nonhazardous waste (often referred to as municipal waste or garbage) will be recycled or deposited at a Class II or III landfill, based on the type of waste generated. Hazardous wastes will be delivered to a permitted offsite TSDF for treatment or recycling or will be deposited at a permitted Class I landfill. The following sections describe the waste disposal sites feasible for disposal of Project wastes (Table 5.14-3).

5.14.2.3.1 Nonhazardous Waste

Approximately 82 total tons of nonhazardous waste will be generated during Project construction. An additional 110 pounds of nonhazardous waste will be generated during its operation on an annual basis. The nonhazardous wastes will be recycled to the extent possible, and what cannot be recycled will be disposed of at a permitted landfill as discussed in the following sections.

It is anticipated that all excavated soil will be used onsite for grading and leveling purposes. In the event that some excavated soil is not reused onsite, it will be classified for disposal on the basis of sampling completed once the soil is excavated and stockpiled. Soil determined to be nonhazardous may be suitable for reuse at a construction site or disposal at a regional disposal facility, depending on its characteristics.

There are two nonhazardous solid waste disposal facilities (landfills) within Alameda County. Information about solid waste facilities, operations, and disposal sites was obtained from the California Department of Resources Recycling and Recovery (CalRecycle) Solid Waste Information System (SWIS) (CalRecycle 2024). Table 5.14-3 presents a summary of solid waste disposal facilities within the County.

Waste Management owns the Altamont Landfill, a Solid Waste facility in Alameda County, approximately two miles from the Project site. The facility is located at 10840 Altamont Pass Rd, Livermore, CA 94550, on 2063.6 acres of land. The facility has a permit for solid waste, contaminated soil, and asbestos-containing waste, at a maximum throughput of 11,150 tons per day and a remaining capacity of 65.4 million cubic yards. Two enforcement actions have been identified at the facility since 2010, including a 2024 Notice of Non-Compliance and a 2016 Notice of Violation.

Republic Services of California I, LLC owns the Vasco Road Sanitary Landfill in Alameda County, approximately 6.2 miles from the Project site. The facility is located at 4001 N Vasco Road, Livermore, Ca 94551, on 323 acres of land. The facility has a permit for solid waste and contaminated soil, at a maximum throughput of 2,518 tons per day and a remaining capacity of 11.6 million cubic yards. No enforcement actions have been identified at the facility since 2010.

Adequate landfill capacity exists; therefore, disposal of nonhazardous waste will not be a constraint on the Project development. Impacts related to landfill capacity will be less than significant.

Table 5.14-3. Solid Nonhazardous Waste Disposal Facilities in the Project Vicinity

Landfill/Transfer Station	Location	Class	Permitted Capacity[a]	Remaining Capacity[a] (cubic yards)	Permitted Throughput[a] (tons per day)	Estimated Closure Date[a]	Violation of Minimum State Standards Noted[a]
Altamont Landfill & Resource Recovery	10840 Altamont Pass Rd Livermore, CA 94550	II, III	124,400,000	65,400,000	11,150	12/1/2027	None
Vasco Road Sanitary Landfill	4001 N Vasco Rd Livermore, CA 94551	II, III	40,207,100	11,560,000	2,158	12/31/2051	None

[a] Based on CalRecycle SWIS Database (CalRecycle 2024)

5.14.2.3.2 Hazardous Waste

Limited hazardous waste may be generated at the Project and would be stored at the facility for less than 90 days. The waste will then be transported to a TSDF by a permitted hazardous waste transporter to an appropriately permitted facility. California has two active Class I landfill facilities that accept hazardous waste: Waste Management Kettleman Hills Landfill and Clean Harbor's Buttonwillow Landfill (DTSC 2024b). Class I landfill facilities vary considerably in what they can do with hazardous waste they receive. Some waste disposal facilities can only store waste, some can treat the waste to recover usable products, and others can dispose of the waste by incineration, deep-well injection, or landfilling. The State of California does not permit incineration and deep-well injection disposal of these materials. The following Class I landfills are available for disposal in California.

Kettleman Hills Landfill: This landfill, operated by Chemical Waste Management Inc., is on a 1,600-acre parcel that has 695 acres of permitted land for management of federal- and state-listed hazardous wastes and municipal solid wastes. According to the 2003 Final Combination Permit, this landfill accepts Class I and II waste, including all hazardous waste except radioactive, medical, and unexploded ordinance. A comprehensive list of all hazardous waste accepted is included in Appendix A of the Draft Kettleman Hills Landfill Part B permit (DTSC, 2024c). Based on the aforementioned list, all anticipated hazardous waste generated by the Project is accepted by Kettleman Hills Landfill (DTSC 2024b). The Kettleman Hills facility currently has three operational landfills. (1) B-17 is permitted to have a 17.8-million-cubic-yard capacity Class II/III, (2) B-18 is permitted to have a 15.6-million-cubic-yard capacity classified as a Class I/II, and (3) B-19 is a permitted 7.7-million-cubic-yard capacity classified as a Class II/III landfill. Currently the B-18 hazardous waste landfill is accepting waste. B-18 has a permitted capacity of 107 million cubic yards, and is under review for expansion. Permit renewal for the facility is currently being reviewed by the DTSC and is expected to have an updated closure date of January 2055.

Clean Harbor's Buttonwillow Landfill: This landfill is permitted at 13.25 million cubic yards, can accept 10,500 tons per day, and is permitted to accept waste until 2040 (CalRecycle 2024). Buttonwillow has been permitted to manage a wide range of hazardous wastes, including Resource Conservation and Recovery Act (RCRA) hazardous wastes, California hazardous waste, and nonhazardous waste for stabilization treatment, solidification, and landfill. The landfill can handle waste in bulk (solids and liquids) and in containers. Typical waste streams include nonhazardous soil, California hazardous soil, hazardous soil for direct landfill, hazardous waste for treatment of metals, plating waste, hazardous and nonhazardous liquid, and debris for microencapsulation (CalRecycle 2024).

5.14.2.4 Waste Disposal Summary

The Project will generate nonhazardous waste that will add to the total waste generated in Alameda County and in California. However, there is adequate recycling and landfill capacity in California to recycle and dispose of the waste generated by the Project. Between recycling and offsite transport, it is estimated that the Project will generate approximately 110 pounds per year from operations. According to CalRecycle, approximately 1,153,828 tons of waste was landfilled within Alameda County in 2023 (CalRecycle 2024). The Project's contribution will likely represent an insignificant percent (less than 0.1%) of the total waste landfilled in the county (CalRecycle 2024). Therefore, the impact of the Project on solid waste recycling and disposal capacity will not be significant.

Hazardous waste generated will consist of used oil, oily rags, batteries, and fire extinguishers. Hazardous waste treatment and disposal capacity at the designated facilities are more than adequate for the requirements of this Project. Therefore, the effect of the Project on hazardous waste recycling, treatment, and disposal capacity will not be significant.

5.14.3 Cumulative Effects

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Public Resources Code Section 21083; Title 14 California Code of Regulations, Title 14, Sections 15064[h], 15065[c], 15130, and 15355).

The quantities of nonhazardous wastes that would be generated during the Project construction and operation would be relatively low; approximately 82 tons (total) of solid waste during construction and approximately 110 pounds per year during operation. Recycling efforts would be prioritized wherever practical, and capacity is available in a variety of treatment and disposal facilities near the Project area.

Approximately 284,847 tons of solid waste were landfilled in Alameda County in 2020, and therefore the cumulative operational contribution will likely represent less than 1% of the total waste landfilled in the County (CalRecycle 2024). Regarding hazardous waste, less than 1 ton will be generated during construction, and only minimal quantities are estimated during operation. There is sufficient capacity at the designated TSDFs.

Additionally, there are 24 proposed projects within a 6-mile radius of the site: three energy storage facilities, eight associated with power generation, one compost facility, one transmission line, one highway widening project, one airport development plan, and nine residential or commercial developments (Figure 2-6). Existing and future projects proposed are subject to, and will follow, federal, state, and local laws and ordinances for waste management; thus, cumulative effects are not significant. Further, adequate capacity exists at both nonhazardous waste and hazardous waste landfills. Therefore, the impact of the Project on solid waste recycling and disposal capacity will not be significant.

5.14.4 Mitigation and Waste Management Methods

The handling and management of waste generated by the Project will follow the hierarchical approach of source reduction, recycling, and disposal. The first priority will be to reduce the quantity of waste generated through pollution prevention methods (such as high-efficiency cleaning methods). The next level of waste management will involve reusing or recycling wastes (such as used oil and battery recycling). Offsite disposal will be used for residual wastes that cannot be reused or recycled.

The following sections present methods for managing nonhazardous and hazardous waste generated by the Project.

5.14.4.1 Construction Phase

The following sections describe the handling requirements and mitigation measures for construction waste.

5.14.4.1.1 Nonhazardous Wastes

Nonhazardous solid waste generated during construction will be collected in onsite dumpsters and will be picked up periodically by an appropriate landfill facility.

Wastewater generated during construction will include sanitary waste and could include excavation and stormwater runoff. Due to the depth of groundwater in the project vicinity dewatering is not anticipated. Sanitary waste will be collected in portable, self-contained toilets and disposed of by a contracted sanitary service. Stormwater runoff will be managed in accordance with a stormwater management permit, which will be obtained before construction starts.. A plan for erosion and sediment control during construction will be developed as part of the Stormwater Management Plan (SWMP) and Stormwater Pollution Prevention Plan (SWPPP) necessary for a general construction permit in the State of California. Nonhazardous wastewater generation will be minimized, where feasible, by water conservation and reuse measures, such as dust control and road watering.

5.14.4.1.2 Hazardous Wastes

Most hazardous waste generated during construction will consist of oily waste, cleaning fluids, and solvents. Some waste in the form of welding materials and dried paint may also be generated. Nonhazardous materials will be used whenever possible to minimize the quantity of hazardous waste generated. The construction contractor will be the generator of hazardous construction waste and will be responsible for proper handling in compliance with all applicable federal, state, and local laws and regulations, including licensing, training of personnel, accumulation limits and times, and reporting and recordkeeping. The hazardous waste will be collected in satellite accumulation containers near the points of generation. This waste will be moved to the contractor's 90-day hazardous waste storage area, located at the plant construction laydown area. The waste will be delivered to an authorized hazardous waste management facility before expiration of the 90-day storage limit.

5.14.4.2 Operation Phase

The following sections describe handling requirements and mitigation measures for waste generated during operation.

5.14.4.2.1 Nonhazardous Wastes

Solid nonhazardous waste generated during facility operations will be collected in onsite trash cans and picked up during monthly site visits for disposal at an appropriate landfill facility.

No sanitary waste will be generated during operations.. Drainage ditches will be used along the perimeter of the site to intercept onsite and offsite flows. Culverts will be placed under the entrance roads to carry those flows offsite. Riprap will be at the outlets of each ditch and culvert to dissipate energy and prevent erosion. A detention basin is proposed to be used at the site to mitigate the effects of higher runoff rates from the development of the site. Stormwater will be discharged into the natural waterways.

Stormwater management focused on the inclusion of temporary and permanent BMPs to manage runoff through the project site. Permanent methods include site-wide vegetation, detention basins, and preservation of existing drainage patterns.

5.14.4.2.2 Hazardous Wastes

To avoid the potential effects on human health and the environment from handling and disposing of hazardous wastes, procedures will be developed to ensure proper labeling, storage, packaging, recordkeeping, and disposal of all hazardous wastes. The following general procedures will be employed:

- As the site is anticipated to generate less than 1,000 kg/month of non-acute hazardous waste the Project will be classified as a Small Quantity Generator and will obtain a site-specific U.S. Environmental Protection Agency (EPA) identification number that will be used to manifest hazardous waste from the Project. Hazardous waste from the Project will be stored onsite for less than 180 days before offsite disposal, treatment, or recycling.
- Hazardous wastes will be accumulated at the generating facility according to the Title 22 California Code of Regulations requirements for satellite accumulation.
- Hazardous wastes will be stored in appropriately segregated storage areas surrounded by berms to contain leaks and spills. The bermed areas will be sized to hold the full contents of the largest single container and, if outdoors and not roofed, will be sized for an additional volume for the rainfall associated with a 25-year, 24-hour storm event.
- As needed, the limited amount of hazardous wastes will be collected by a licensed hazardous waste hauler using a hazardous waste manifest. Wastes will be shipped only to authorized hazardous waste management facilities. Biannual hazardous waste generator reports will be prepared and submitted to

DTSC. Copies of manifests, reports, waste analyses, and other documents will be kept at the Applicant's home office and will remain accessible for inspection for at least three years.

- Employees will be trained in hazardous waste procedures, spill contingencies, and waste minimization.
- Procedures will be developed to reduce the quantity of hazardous waste generated. Nonhazardous materials will be used instead of hazardous materials whenever practical, and wastes will be recycled whenever practical.

To minimize the quantity of hazardous waste deposited in landfills, the following practices will be used:

- Spent oil filters and oily rags will be recycled.
- Transformers (containing mineral oil) and circuit breakers (containing sulfur hexafluoride) will be managed according to manufacturer instructions.
- Lead acid batteries and battery electrolyte solution will be recycled using an approved battery recycling facility.
- Lithium ion batteries will be recycled using an approved battery recycling facility.

5.14.4.3 Facility Closure

When the Project is closed, both nonhazardous and hazardous wastes must be handled properly. Closure can be temporary or permanent. Temporary closure would be for a period greater than the time required for normal maintenance, including economic or mechanical replacements or overhaul. Causes for temporary closure could be flooding of the site or damage to the plant from earthquake, fire, storm, or other natural causes. Permanent closure would consist of a cessation in operations with no intent to restart operations and could result from the age of the plant, damage to the plant beyond repair, economic conditions, or other unforeseen reasons. Handling of wastes for these two types of closure are discussed in the following sections.

5.14.4.3.1 Temporary Closure

For a temporary closure, where there is no release of hazardous materials, facility security will be maintained on a 24-hour basis, and the California Energy Commission Compliance Project Manager will be notified. Depending on the length of shutdown necessary, a contingency plan for the temporary cessation of operations will be implemented. This plan will be prepared as described in Section 2.3. The plan will be developed to ensure conformance with all applicable LORS and the protection of public health and safety and the environment. The plan, depending on the expected duration of the shutdown, would include the safe shutdown of all equipment. All wastes will be disposed of according to applicable LORS, as discussed in Section 5.14.5.

If the temporary closure is in response to facility damage, or where there is a release or threatened release of hazardous waste or materials into the environment, procedures will be followed as set forth in the applicable risk management, spill control, or emergency action plans. Procedures include methods to control releases, notification of applicable authorities and the public, emergency response, and training for generating facility personnel in responding to and controlling releases of hazardous materials and hazardous waste. Once the immediate problem of hazardous waste and materials release is contained and cleaned up, temporary closure will proceed as described for a closure where there is no release of hazardous materials or waste.

5.14.4.3.2 Permanent Closure

The planned life of the generation facility is 30 years, although operation could be longer. When the facility is permanently closed, the handling of nonhazardous and hazardous waste and materials will be part of a decommissioning plan that will be developed and submitted to the California Energy Commission for review at least 12 months prior to planned facility closure. The plan will comply with applicable LORS and will attempt to maximize the recycling of facility components. The facility will be cleaned and the facility components will be salvaged to the greatest extent possible. Listed hazardous waste and wastes found to be hazardous will be transferred to a permitted Class I landfill. Nonhazardous wastes will be transferred to a permitted Class II or Class III landfill as appropriate for each waste. These solids will be managed and disposed of properly so as not to cause significant environmental or health and safety impacts.

The site will be secured 24 hours per day during the Project decommissioning activities.

5.14.4.3.3 Monitoring

Because the environmental impacts caused by construction and operation of the facility are expected to be minimal, extensive monitoring programs will not be required. Generated waste, both nonhazardous and hazardous, will be monitored during Project construction and operation in accordance with the monitoring and reporting requirements mandated by the regulatory permits to be obtained for construction and operation.

5.14.5 Laws, Ordinances, Regulations, and Standards

Nonhazardous and hazardous waste handling at the Project will be governed by federal, state, and local LORS. Applicable LORS address proper waste handling, storage, and disposal practices to protect the environment from contamination and to protect facility workers and the surrounding community from exposure to nonhazardous and hazardous waste. Table 5.14-4 presents a summary of the LORS applicable to waste handling for the Project.

Table 5.14-4. LORS for Waste Management

Laws, Ordinances, Regulations, and Standards	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Federal			
RCRA Subtitle D	Regulates design and operation of nonhazardous solid waste landfills. Project solid waste will be collected and disposed of by a collection company in conformance with Subtitle D.	CalRecycle	Sections 5.14.2.3, 5.14.2.4, and 5.14.3
RCRA Subtitle C	Controls storage, treatment, and disposal of hazardous waste. Hazardous waste will be handled by contractors in conformance with Subtitle C.	DTSC	Sections 5.14.2.3, 5.14.2.4, and 5.14.3
Clean Water Act	Controls discharge of wastewater to the surface waters of the United States.	RWQCB	Sections 5.14.2.3, 5.14.2.4, and 5.14.3

Laws, Ordinances, Regulations, and Standards	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
State			
CEQA	Requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of the Project and to reduce environmental impacts to the extent feasible.		Entire document
CIWMA	Controls solid waste collectors, recyclers, and depositors. Project solid waste will be collected and disposed of by a collection company in conformance with CIWMA.	CalRecycle	Sections 5.14.2.3, 5.14.2.4, and 5.14.3
HWCL	Controls storage, treatment, and disposal of hazardous waste. Hazardous waste will be handled by contractors in conformance with the HWCL.	DTSC	Sections 5.14.2.3, 5.14.2.4, and 5.14.3
Porter-Cologne Water Quality Control Act	Controls discharge of wastewater to surface waters and groundwaters of California.	RWQCB	Sections 5.14.2.3, 5.14.2.4, and 5.14.3
California Fire Code	Controls storage of hazardous materials and wastes and the use and storage of flammable/combustible fluids. Wastes will be accumulated and stored in accordance with Fire Code requirements. Permits for storage containers will be obtained, as needed, from the ICFPD.	Alameda County Fire Department	Section 5.5.6
Assembly Bill 341/ State Bill 1018 – Mandatory Commercial Recycling	Requires commercial businesses generating four cubic yards per week or more of solid waste to adopt recycling practices.	CalRecycle	Sections 5.14.2.3, 5.14.2.4, and 5.14.3
CCR Title 24, Part II (CALGreen Standards)	Establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency, water conservation, material conservation, and interior air quality.	CalRecycle	Sections 5.14.1, 5.14.4.1, and 5.14.4.2
CCR Title 22, Division 45	Controls storage, treatment, and disposal of hazardous waste under the DTSC	CalRecycle	Sections 5.14.1, 5.14.4.1, 5.14.4.2

Laws, Ordinances, Regulations, and Standards	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Local			
Hazardous Materials Generator Program – CUPA various programs	The ACDEH Hazmat Division is certified by the California Environmental Protection Agency as the local CUPA for Alameda County that regulates and conducts inspections of businesses that handle hazardous materials, hazardous wastes, and/or have underground storage tanks. The Project will comply with Hazardous Materials Business Plan requirements concerning storage and handling of hazardous materials and wastes, and will also cooperate with the agency on resolution of any environmental issues at the site.	ACDEH 1131 Harbor Bay Parkway Alameda, CA 94502-6577 510.567.6841 Matthew.soby@acgov.org	Sections 5.14.2.3, 5.14.2.4, and 5.14.3
ACDEH, Office of Solid/Medical Waste and Body Art Program	Acts as Local Enforcement Agency for CalRecycle.	ACDEH 1131 Harbor Bay Parkway Alameda, CA 94502-6577 510.567.6841 Matthew.soby@acgov.org	Sections 5.14.2.3, 5.14.2.4, and 5.14.3

Note:
ACDEH = Alameda County Department of Environmental Health
CCR = California Code of Regulations
CEQA = California Environmental Quality Act
CIWMA= California Integrated Waste Management Act
CUPA = Certified Unified Program Agency
DTSC = Department of Toxic Substances Control
HWCL = Hazardous Waste Control Law
RCRA = Resource Conservation and Recovery Act
RWQCB = Regional Water Quality Control Board

5.14.5.1 Federal LORS

EPA regulates wastewater under the 1972 Amendments to the Federal Water Pollution Control Act, commonly known as the Clean Water Act. The federal statute that controls nonhazardous and hazardous waste is the RCRA 42 United States Code 6901, et seq. RCRA's implementing regulations are found in Title 40 Code of Federal Regulations, Parts 260 et seq. Subtitle D assigns responsibility for the regulation of nonhazardous waste to the states; federal involvement is limited to establishing minimum criteria that prescribe the best practicable controls and monitoring requirements for solid waste disposal facilities. Subtitle C controls the generation, transportation, treatment, storage, and disposal of hazardous waste through a comprehensive "cradle-to-grave" system of hazardous waste management techniques and requirements. It applies to all states and to all hazardous waste generators (above certain levels of waste produced). Additional requirements for small quantity generators have been established in the Generator Improvements Rule. The Project will conform to these laws in its generation, storage, transport, and disposal of any hazardous waste generated at the facility, as well as its communications with local emergency responders. EPA has delegated its authority for implementing the law to the State of California.

5.14.5.2 State LORS

Wastewater is regulated by the State Water Quality Control Board and RWQCB under the Porter-Cologne Water Quality Control Act. Nonhazardous waste is regulated by the CIWMA of 1989, found in Public Resources Code Sections 40000 et seq. This law provides an integrated statewide system of solid waste management by coordinating state and local efforts in source reduction, recycling, and land disposal safety. Counties are required to submit Integrated Waste Management Plans to the State. This law directly affects Alameda County and the solid waste hauler and disposer that will collect the Project solid waste. It also affects the Project to the extent that hazardous wastes are not to be disposed of along with solid waste.

RCRA allows states to develop their own programs to regulate hazardous waste. The programs must be at least as stringent as RCRA. California has developed its own program in HWCL (Health and Safety Code Sections 25100 et seq.). Because California has elected to develop its own program, HWCL performs essentially the same regulatory functions as RCRA and is the law that will regulate hazardous waste at the Project. However, HWCL includes hazardous wastes not classified as hazardous waste under RCRA. Because hazardous wastes will be generated at the Project during construction and operation, HWCL will require the Applicant to adhere to storage, recordkeeping, reporting, and training requirements for these wastes.

State law (Assembly Bill 341/Senate Bill 1018) requires businesses that generate 4 cubic yards or more of commercial solid waste per week to institute a recycling program. The Applicant will avail itself of opportunities provided by the franchised waste hauler and disposal companies to divert as much waste as possible from landfills and, instead, will recycle the materials.

5.14.5.3 Local LORS

For solid nonhazardous waste, the laws are administered and enforced primarily by the ACDEH. The ACDEH will serve as CUPA for the Project and will advise on the health effects of leaks and spills of hazardous materials and hazardous waste.

Local agency requirements and LORS associated with the Project will be addressed before the construction and operation of the facility, and the facility will conform to all local requirements. These include the need to file a Hazardous Material Business Plan (HMBP) using the California Environmental Reporting System (CERS) submittal system, which will allow the storage of hazardous materials and wastes in accordance with state and local regulations. The HMBP will be updated annually in accordance with applicable regulations.

For emergency incidents, the Alameda County Fire Department will be the first responder with the nearest fire station, Alameda County Fire Department Station No. 20, located at 7000 East Avenue, L-388, Livermore, CA. In the event additional support is needed the Fire Department would then contact the nearest fire station, Mountain House Fire Station No. 1 located at 911 Tradition Street, Mountain House, CA 95391, approximately 4 miles from the Project site. Additional information on emergency response is provided in Section 5.5, Hazardous Materials, and Section 5.16, Worker Health and Safety.

5.14.5.4 Codes

The design, engineering, and construction of hazardous waste storage and handling systems will be in accordance with all applicable codes and standards, as follows:

- California Building Code
- California Fire Code
- Alameda County Code

5.14.6 Agencies and Agency Contacts

Several agencies, including EPA at the federal level and DTSC and the California Environmental Protection Agency – CalRecycle at the state level, regulate nonhazardous and hazardous waste and will be involved in the regulation of the waste generated by the Project. The regulations, however, are administered and enforced primarily through the ACDEH, which is the designated CUPA for Alameda County, and the Alameda County Public Health Department, Environmental Health Services. The persons to contact for nonhazardous and hazardous waste management are listed in Table 5.14-5.

Table 5.14-5. Agency Contacts for Waste Management

Issue	Agency	Contact
Nonhazardous Waste		
Solid Waste and Recycling	Office of Solid/Medical Waste Management & Body Art Programs	Matthew Soby 1131 Harbor Bay Parkway Alameda, California 94502-6577 Telephone: 510.567.6790 Fax: 510.337.9234 Matthew.soby@acgov.org
Hazardous Waste		
Hazardous Waste/HMBP[a]	Office of Solid/Medical Waste Management & Body Art Programs	Matthew Soby 1131 Harbor Bay Parkway Alameda, California 94502-6577 Telephone: 510.567.6790 Fax: 510.337.9234 Matthew.soby@acgov.org

Note:

[a] Approvals would be superseded by California Energy Commission approval of Project under the opt-in program

5.14.7 Permits and Permit Schedule

The temporary storage of hazardous wastes at the Project will be included in the Project HMBP to be submitted to the ACDEH, as described in Section 5.5, Hazardous Materials. No additional permits are required.

5.14.8 References

Alameda County Fire Department. 2024. Personal communication between Station 21 On-Duty Battalion Commander and James Verhoff, Jacobs; discussed fire department current information, staffing, and provided the most updated contact information. November 25.

Alameda County Fire Department. 2025. Personal communication between Station 20 and Sam Schoevaars, Jacobs; discussed first response fire department. January 29.

California Department of Resources Recycling and Recovery (CalRecycle). 2024. Solid Waste Information System (SWIS) Database, Alameda County. Available online: https://www2.calrecycle.ca.gov/SolidWaste/Site/Search. November 20.

California Department of Toxic Substances Control (DTSC). 2024a. *DTSC's Hazardous Waste and Substances Site List (Cortese List)*, Alameda County. Available online: EnviroStor Database. November 14.

California Department of Toxic Substances Control (DTSC). 2024b. *Generator Improvement Rules.* Available online: Generator Improvements Rule | Department of Toxic Substances Control. November 14.

California Department of Toxic Substances Control (DTSC). 2024c. *RCRA Equivalent Hazardous Waste Facility Permit (Draft).* April 2024.

Environmental Data Resources, LLC. 2024. *Sand Hill Wind Project EDR Radius Map, Sand Hill Wind Project*. December.

Waste Management, Inc. 2024. November 27. Available online: https://altamontlandfill.wm.com/index.jsp.

5.15 Water Resources

This section discusses the environmental and regulatory setting and provides an analysis of potential impacts on water resources associated with the Viracocha Hill Battery Energy Storage System (Viracocha Hill BESS or Project). The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

Section 5.15.1 describes the existing hydrologic environment and water resources that could be affected by the Project. Section 5.15.2 presents potential environmental effects of Project construction and operation on water resources. Section 5.15.3 discusses cumulative Project effects. Section 5.15.4 discusses proposed mitigation measures. Section 5.15.5 presents applicable laws, ordinances, regulations, and standards (LORS) related to water resources. Section 5.15.6 describes permits that relate to water resources, lists contacts with relevant regulatory agencies, and presents a schedule for obtaining permits. Section 5.15.7 lists references cited in this section.

5.15.1 Affected Environment

5.15.1.1 Location

The Project study area is located in unincorporated Alameda County. The proposed Project is in the Altamont Pass, approximately 0.8 mile southwest of the Bethany Reservoir. The Project is accessible via an existing access road connecting to Altamont Pass Road. The city limits of Tracy are 3.3 miles east of the Project site. In addition to Bethany Reservoir, the area surrounding the Project includes operating wind power generation facilities, the Altamont Landfill approximately 0.5 mile to the west, and operating farmland to the east. Existing land use at the Project site is undeveloped grasslands used as pasture for livestock. The topography is hilly and generally slopes from the higher elevations in the southwest down toward Bethany Reservoir to the northeast. The highest elevation is approximately 450 feet above mean sea level (amsl) at the southwest corner and the lowest elevation is approximately 410 feet amsl in the northeast corner. The property is mostly grassland/pasture.

5.15.1.2 Temperature and Rainfall

The Project site is approximately 10 miles west of Tracy, the second most populous city in San Joaquin County, California. Tracy has a Mediterranean semi-arid climate with cool, moist winters and hot, dry summers. December and January are the coolest months, averaging around 47° Fahrenheit, and July is the warmest month, averaging 77.3° Fahrenheit (WRCC 2024). Precipitation averages 12.88 inches annually, most of which falls from November through March (WRCC 2024). Table 5.15-1 summarizes the typical temperature and precipitation for the area. Rainfall and runoff data are described in more detail in the Hydrology & Hydraulics Report prepared for the project (Burns & McDonnell 2025), provided as Appendix 5.15A.

Table 5.15-1. Tracy Pumping Plant, California Climate and Precipitation – Annual and Monthly Averages

	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Maximum Temperature (°F)	74.3	54.6	61.2	66.5	72.2	79.6	87.1	92.6	92.0	87.5	78.5	64.7	55.1
Avg. Mean Temperature (°F)	62.8	47.2	52.0	56.5	61.1	67.5	72.9	77.3	76.7	73.5	65.9	55.3	47.6
Avg. Minimum Temperature (°F)	49.7	38.2	41.7	44.6	47.6	53.3	57.5	60.3	60.3	58.1	52.2	43.9	38.5
Avg. Total Precipitation (in)	12.26	2.64	2.17	1.60	0.81	0.40	0.11	0.03	0.06	0.25	0.62	1.63	1.94

Source: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?catrpp+nca. Temperature from Tracy Pumping Plant Weather station (NCDC 1981-2010 Normals).

Avg.= Average

°F = degrees Fahrenheit

in = inches

5.15.1.3 Surface Water Resources

The Project site is located in the southwestern portion of the Clifton Court Forebay watershed, within the Hydrologic Unit Code (HUC) 12 designation, which is a part of the larger Sacramento-San Joaquin Delta (HUC 8) watershed. Most drainages surrounding the Project area, including Clifton Court Forebay, Lower Old River, and Brushy Creek watersheds, flow east toward the Central Valley. Near the Project site, drainages flow to Bethany Reservoir, which is the northern terminus of the California Aqueduct and serves as the forebay for the South Bay Pumping Plant that feeds the South Bay Aqueduct. Based on the National Hydrography Dataset (NHD), in combination with the U.S. Geological Survey (USGS) 7.5-Minute Clifton Court Forebay Quadrangle and Google Earth, there are two intermittent “stream/rivers” near the proposed BESS site (Figure 5.15-1).

5.15.1.4 Surface Water Quality

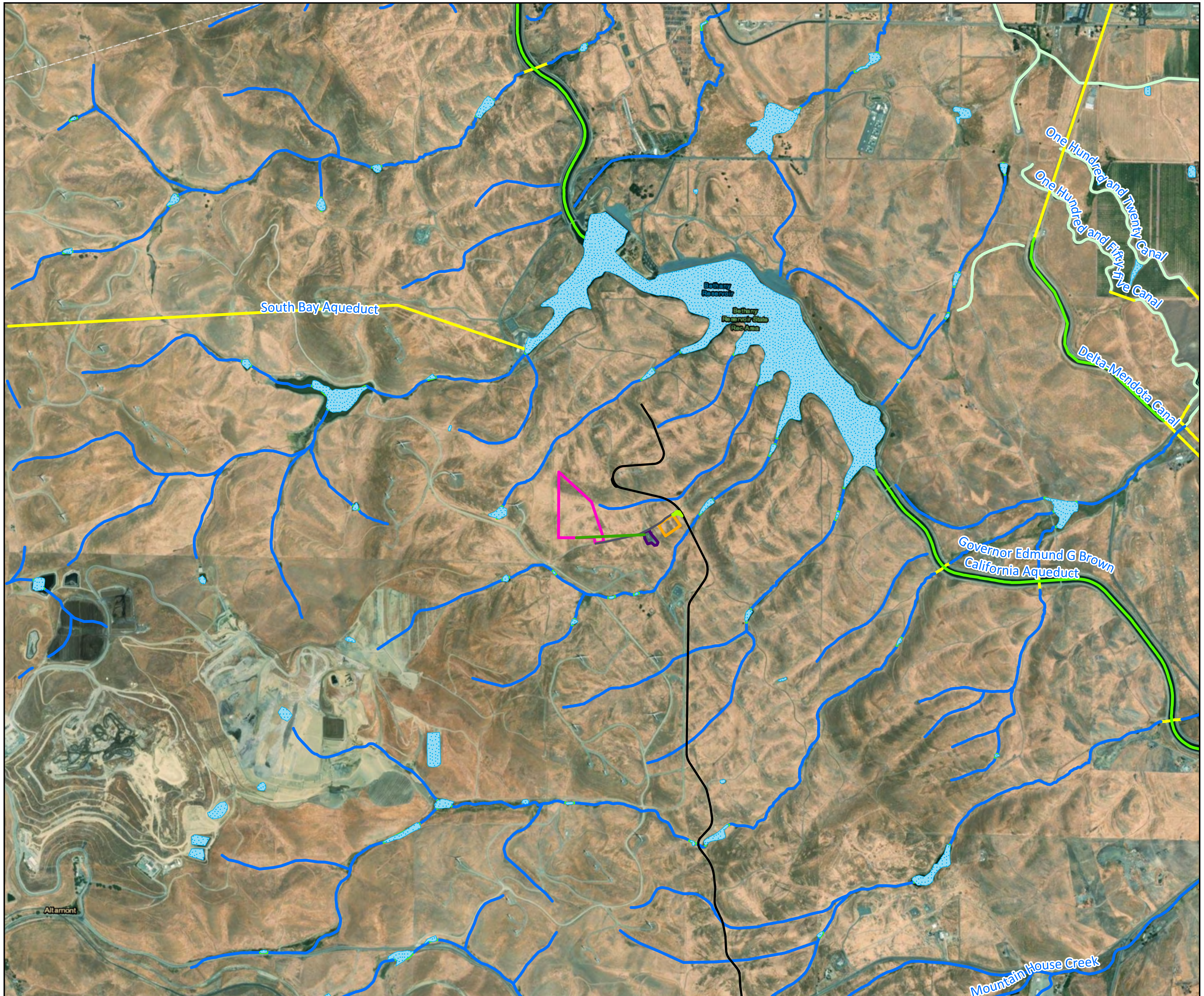
The Regional Water Quality Control Boards (RWQCBs) make critical water quality decisions for their designated regions, including setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions. The RWQCBs adopt water quality control plans, or Basin Plans, which establish water quality objectives to ensure the reasonable protection of beneficial uses and a program of implementation for achieving water quality objectives in the basins. For those waters not attaining water quality standards, the RWQCB establishes total maximum daily loads (TMDLs) and a program of implementation to meet the TMDLs.

Section 303(d) of the Clean Water Act (CWA) requires states to make a list of waters that are not attaining water quality standards. For waters on this list, the states are to develop TMDLs. A TMDL must account for all sources of the pollutants that caused the water to be listed. Federal regulations require that the TMDL, at a minimum, account for contributions from point sources (federally permitted discharges) and contributions from nonpoint sources. TMDLs are established at the level necessary to implement the applicable water quality standards. In California, the State Water Resources Control Board (SWRCB) has interpreted state law (Porter-Cologne Water Quality Control Act, California Water Code Sections 13000 et. seq.) to require that implementation be addressed when TMDLs are incorporated into water quality control plans (Basin Plans). The Porter-Cologne Act requires each RWQCB to formulate and adopt Basin Plans for all areas within its region. It also requires that a program of implementation be developed that describes how water quality standards will be attained. TMDLs can be developed as a component of the program of implementation, thus triggering the need to describe the implementation features, or alternatively as a water quality standard. When the TMDL is established as a standard, the program of implementation must be designed to achieve the TMDL.

The Project is within the jurisdictional boundaries of the Central Valley Regional Water Quality Control Board (CVRWQCB). Water quality objectives for water resources potentially affected by the Project are contained in the Water Quality Control Plan for the Central Valley Region (SWRCB 2019). The following CWA 303(d) impairments are listed by the CVRWQCB (SWRCB 2022):

- Old River (San Joaquin River to Delta-Mendota Canal; in Delta Waterways, southern portion) – impaired for chlorpyrifos, electrical conductivity, total dissolved solids (TDS), and low dissolved oxygen
- The Delta Waterways (export area) – impaired for dichlorodiphenyltrichloroethane (DDT), electrical conductivity, group A pesticides, invasive species, mercury, and toxicity

The beneficial use designations for Bethany Reservoir and tributaries, including the California Aqueduct, include Industrial Service Supply, Municipal and Domestic Supply, Hydropower Generation, Industrial Process Supply, Water-contact Recreation, Non-contact Water Recreation, Wildlife Habitat, Agricultural Supply – Irrigation, and Agricultural Supply – Stock Watering.



Legend

- Proposed 230-kV Gen-Tie
- Proposed Road Improvement Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)

NHD Flowline

- Canal/Ditch
- Pipeline
- Stream/River
- Artificial Path
- NHD Waterbody

Source:
1) ESRI Aerial Images

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Miles

Figure 5.15-1
Surface Waters
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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5.15.1.5 Groundwater

The proposed Project is located in the area between the Livermore Valley Groundwater Basin (DWR Basin No. 2-10) and the Tracy Subbasin of the San Joaquin Valley Groundwater Basin (DWR Basin No. 5-22.15; Figure 5.15-2). There are no groundwater wells within 0.5 mile of the Project site boundary. No direct groundwater use is proposed as part of the Project; however, water for dust suppression during construction would be obtained from Zone 7 Water Agency, Byron-Bethany Irrigation District, the City of Livermore, or other approved water district or agency and trucked to the Project site. It is possible water obtained from one of these water suppliers could be sourced from groundwater. Once a water supplier has been identified, a will serve letter or letter of intent will be provided.

5.15.1.6 Flooding Potential

Federal Emergency Management Agency (FEMA) Flood insurance Rate Maps identify flood zones and areas that are susceptible to 100-year and 500-year floods. As shown on Figure 5.15-3, the Project area is outside of the FEMA 100-year floodplain (Flood Zone A), as identified on a Flood Insurance Rate Map.

5.15.1.7 Water Supply

This subsection describes the quantity of water required and the potential sources of water supply.

5.15.1.7.1 Construction Water Use

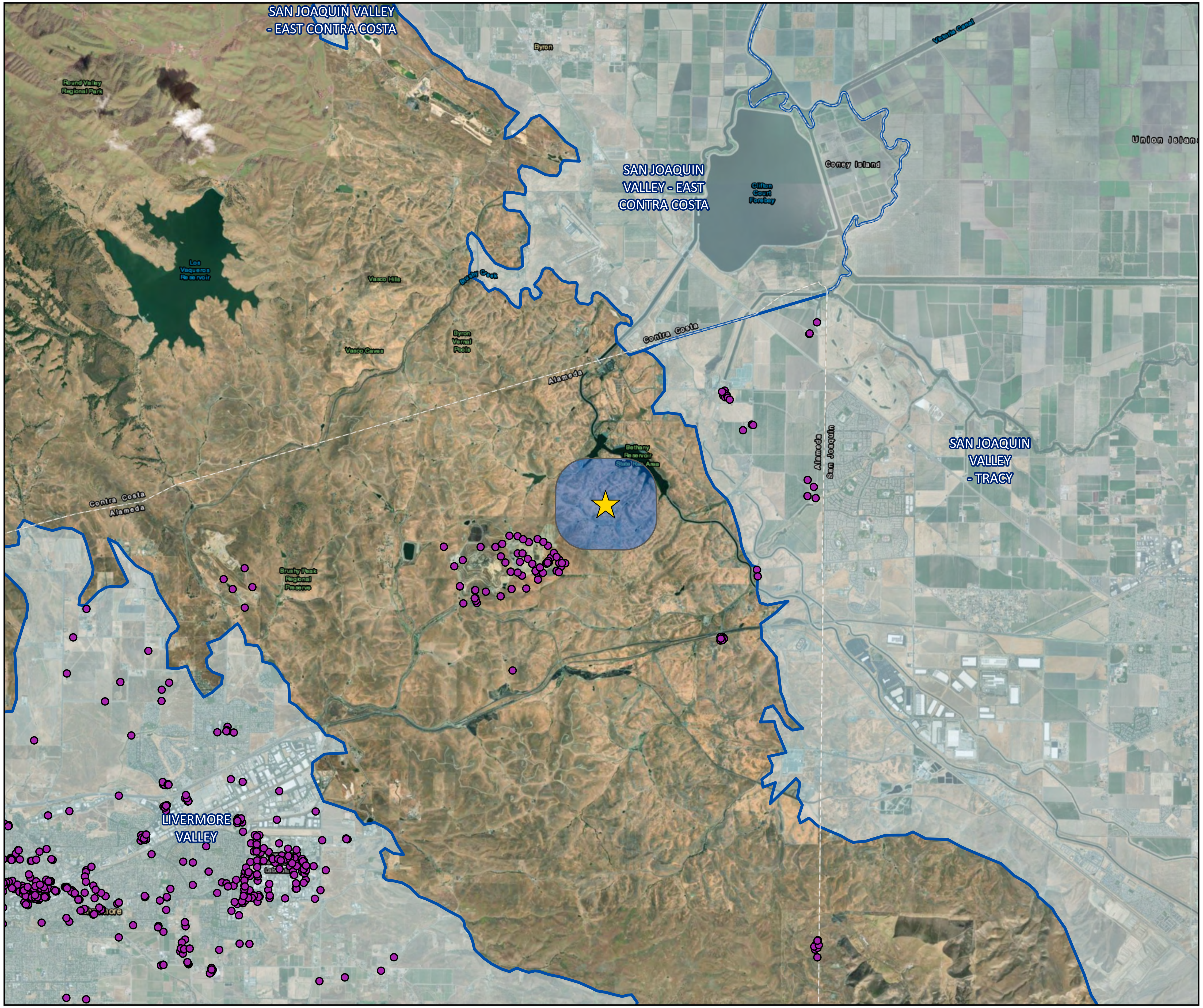
During construction, water will be used onsite for dust suppression. The Project is anticipated to use up to a maximum of 13.3 gallons per minute for 5 to 10 hours per day during the approximately 14-month construction period, resulting in an annual water usage of 1.7 acre-feet during construction. Water for dust suppression during construction would be obtained from Zone 7 Water Agency, Byron-Bethany Irrigation District, the City of Livermore, or other approved water district or agency and trucked to the Project site. Once a water supplier has been identified a will serve letter or letter of intent will be provided. A sanitary water supply line would not be required during construction because restroom facilities would be portable units, serviced by licensed providers, and water and sewage from the restroom facilities would be stored in onsite tanks and serviced by trucks. Drinking water would be provided via portable water coolers.

5.15.1.7.2 Domestic and Sanitary Water Use

Water demand for operation and maintenance of the Project is anticipated to be minimal. A single 28,000-gallon fire water tank will be onsite for operations, which will be filled once and then topped off as needed. Water for the fire water tank would be obtained from Zone 7 Water Agency, Byron-Bethany Irrigation District, the City of Livermore, or other approved water district or agency and trucked to the Project site. Sanitary facilities and sinks will not be required during operation. Operational staff are anticipated to visit the Project site monthly with major operational maintenance to be performed every 4 to 5 years.

5.15.1.8 Stormwater

The Project area does not have any existing stormwater drainage facilities; therefore, runoff from the Project site is not currently diverted to a storm drain. Stormwater runoff instead flows offsite into unpaved areas and infiltrates into the ground. The soils underlying the Project area are mostly clay and are predominantly high runoff soils in Hydrologic Soil Group D (USDA 2024). The existing site drainage generally flows from the south and north toward the middle of the site and exits to the east.



Legend

- Viracocha Hill BESS Project
- Groundwater Well
- Project Study Area Half-mile Buffer
- Groundwater Basin

Source:
1) ESRI Aerial Images

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Miles

Figure 5.15-2
Groundwater Basins
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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Legend

Viracocha Hill BESS Project

FEMA Flood Zone A

Source:
1) ESRI Aerial Images

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Figure 5.15-3
FEMA Floodplain
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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5.15.2 Environmental Analysis

Project effects on water resources can be evaluated relative to significance criteria derived from the California Environmental Quality Act (CEQA) Appendix G checklist. The Project is considered to have a potentially significant effect on water resources if it would do the following:

- Not have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage facilities, the construction or relocation of which could cause significant environmental effects.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin.
- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface water or groundwater quality.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that will result in substantial erosion or siltation onsite or offsite; substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite; create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage stems or provide substantial additional sources of polluted runoff; or impede or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation.

5.15.2.1 Water Supply

Water use for the Project would be minimal and temporary, primarily associated with construction. Water for the Project would be obtained from Zone 7 Water Agency, Byron-Bethany Irrigation District, the City of Livermore, or other approved water district or agency and trucked to the Project site. Once a water supplier has been identified, a will serve letter or letter of intent will be provided that confirms sufficient water supplies would be available to serve the Project. Potential water supply impacts from construction and operation of the Project are discussed in the following sections.

5.15.2.1.1 Construction

During construction, water will be used onsite for dust suppression. The Project is anticipated to use up to a maximum of 13.3 gallons per minute for 5 to 10 hours per day during the approximately 14-month construction period, resulting in an annual water usage of 1.7 acre-feet during construction. Water for dust suppression during construction would be obtained from Zone 7 Water Agency, Byron-Bethany Irrigation District, the City of Livermore, or other approved water district or agency and trucked to the Project site. A sanitary water supply line would not be required during construction because restroom facilities would be portable units, serviced by licensed providers, and water and sewage from the restroom facilities would be stored in onsite tanks and serviced by trucks. Drinking water would be provided via portable water coolers. No new or expanded offsite water or wastewater facilities would be required.

5.15.2.1.2 Operation

Water demand for operation and maintenance of the Project is anticipated to be minimal. A single 28,000-gallon fire water tank will be onsite for operations, which will be filled once and then topped off as needed. Sanitary facilities and sinks will not be required during operation. Operational staff are anticipated to visit the Project site monthly with major operational maintenance to be performed every 4 to 5 years. No new or expanded offsite water or wastewater facilities would be required.

5.15.2.2 Groundwater

The Project site does not overlie a groundwater basin, as designated by the California Department of Water Resources (DWR); therefore, the Project would not conflict with or obstruct the implementation of a sustainable groundwater management plan. No groundwater wells are located within 0.5 mile of the Project boundary and no wells are located within the Project site (Figure 5.15-2), indicating that groundwater is very limited in the Project area. No direct groundwater use is proposed as part of the Project; however, water for the Project would be obtained from Zone 7 Water Agency, Byron-Bethany Irrigation District, the City of Livermore, or other approved water district or agency and trucked to the Project site. It is possible water obtained from one of these water suppliers could be sourced from groundwater. Although groundwater from a water wholesaler such as Zone 7 or a water retailer would be a potential source of water, water use associated with the Project would be minimal. Therefore, the Project would not substantially deplete groundwater supplies or require or result in the relocation or construction of new or expanded water facilities.

The Project is located in a rural area that is predominantly unpaved, where precipitation naturally infiltrates. Project construction would involve relatively small footprints, compared with the size of the adjacent groundwater basins, and, therefore, would not block groundwater infiltration. Runoff from the Project site would be captured in drainage ditches and not be diverted to a storm drain. This would allow stormwater runoff to flow offsite into unpaved areas and infiltrate into the ground. As a result, the Project would not substantially interfere with groundwater recharge.

5.15.2.3 Stormwater Runoff and Drainage

Potential impacts associated with stormwater runoff and drainage from construction and operation of the Project are discussed in the following sections.

5.15.2.3.1 Construction

Construction-related activities associated with the Project would introduce the potential for increased erosion and sedimentation, with subsequent effects on drainage and water quality. During construction, site preparation, access road construction, and other construction activities would create areas of bare soil that could be exposed to erosive forces. Vegetation clearing and ground disturbance can result in short-term increases in water and wind erosion rates. Soil erosion may increase the sediment load in receiving surface waters downstream of the construction site. In addition, incidental spill of petroleum products and hazardous substances could occur during grading and construction. Materials could include small quantities of gasoline, diesel fuel, oils, and lubricants. Uncontrolled spills of these substances could similarly impact downstream water bodies.

To the extent practical, layout of the batteries, site clearing, and site grading would preserve the natural waterways on the site. Site grading would incorporate and protect the natural drainage features and existing irrigation patterns on the site by maintaining areas of mild slopes and removing undulations that result in concentrated stormwater runoff. The Project would not substantially alter the existing drainage pattern in the area because drainage would be considered in the design. Vegetation would be reestablished in disturbed areas promptly after construction activities have temporarily or permanently ceased.

Construction activities would be performed in accordance with the California National Pollution Discharge Elimination System (NPDES) General Permit for the Discharge of Stormwater Associated with Construction Activity. The NPDES Permit will require the development of a Storm Water Pollution Prevention Plan (SWPPP) and the implementation of measures to control erosion, sedimentation, and the release of contaminated runoff. In addition, the California Energy Commission (CEC) requires that Project owners develop and implement a drainage, erosion, and sediment control plan (DESCP) to reduce the impact of runoff from construction sites. The SWPPP and DESCP will include best management practices (BMPs) that include physical barriers to prevent erosion and sedimentation, construction of stormwater detention basins to control runoff and reduce potential sedimentation, limitations on work periods during storm events, and protection of stockpiled materials, which would substantially reduce or prevent erosion from occurring during construction. Monitoring would be performed as part of the SWPPP and DESCP and would include inspections to ensure that the BMPs described in the SWPPP and DESCP are properly implemented and effective.

Implementation of the Project-specific SWPPP and DESCP would minimize potential for sedimentation of downstream water bodies. Therefore, with adherence to regulatory requirements and conditions of CWA Section 401 Certification, as well as implementation of the SWPPP and DESCP, the Project would not degrade water quality or conflict with or obstruct implementation of a water quality control plan. Applicant commitments that will further reduce potential impacts on water resources by Project construction are described in section 5.15.4.

5.15.2.3.2 Operation

The Project includes improvements to an existing 0.3-mile access road. The road would be gravel and would not introduce new impervious surfaces. The soils underlying the Project area are mostly clay and are predominantly high runoff soils in Hydrologic Soil Group D (USDA 2024). Compacted gravel roads have runoff potential similar to that of the existing Hydrologic Soil Group D soils. Therefore, the Project roads would not result in a net increase in runoff potential compared with existing native soils where the new gravel would be placed.

The Project area does not have any existing stormwater drainage facilities. Drainage ditches will be used along the perimeter of the site to intercept onsite and offsite flows. The flat-bottom ditches will be 4 feet wide and approximately 1 foot deep. Riprap would be installed at the outlets of each ditch and culvert to dissipate energy and prevent erosion. Culverts would be placed under the entrance roads to carry flows offsite to unpaved areas to allow for infiltration. A detention basin would be used at the site to capture runoff from the developed areas of the site. The detention basin would be designed such that post-construction runoff rates match pre-construction rates from 10% of the pre-construction 2-year peak flow up to the pre-construction 10-year peak flow. The detention basin control structure would be designed to accommodate storm events up to and including the 100-year event of a 24-hour depth of 3.93 inches (Burns & McDonnell 2025). Therefore, the Project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite or an increase in flooding onsite or offsite.

Outdoor material storage, trash storage, and waste handling areas would be graded to prevent run-on and direct any runoff to treatment controls. Additionally, these areas would have a base made from material impervious to leaks and spills, and a cover or enclosure to prevent rainfall from directly contacting the storage area. If required, appropriate spill containment and cleanup kits would be maintained during operation of the Project and a spill prevention control and countermeasures plan would be developed as part of the SWPPP.

The Project would comply with measures included in the DESCP to minimize soil erosion, pending stabilization of soils following grading. Project operation is not anticipated to result in a substantial amount of additional runoff that would degrade surface or groundwater quality. Compliance with NPDES requirements would minimize the potential erosion- and sedimentation-related water quality impacts through the implementation of erosion control BMPs and a SWPPP.

5.15.2.4 Flooding and Inundation

Because the Project area is not within a 100-year flood zone or potential dam failure inundation area, the area is unlikely to be subject to flood flows or inundation. In addition, the Project site is not located near the Pacific Ocean or adjacent to an enclosed body of water and, therefore, is not susceptible to inundation by tsunami or seiche. As a result, the Project would not risk release of pollutants due to inundation. No impacts would occur.

5.15.3 Cumulative Effects

Cumulative projects that would have the potential to be considered in a cumulative context with the proposed Project's incremental contribution and that are included in the analysis of cumulative impacts relative to water resources are discussed in Section 2.5. Cumulative projects were identified within 6 miles of the Project site and include residential, commercial, and industrial development, as well as energy projects similar to the proposed Project. Most of the cumulative projects would involve both construction and operational activities. Because the Project would not result in any impacts to water resources, it would not result in or contribute to a cumulatively considerable effect on water resources.

5.15.4 Mitigation Measures

Potential impacts on water resources are less than significant, so no mitigation measures are required. This section presents typical mitigation measures that can further reduce potential impacts on water resources from Project construction and operation.

- The Project will comply with all of the requirements of the General NPDES Permit for Discharges of Stormwater Associated with Construction Activity. The Project owner shall develop and implement a SWPPP, in accordance with SWRCB Water Quality Order No. 2009-0009-DWQ (or an updated order) for the construction of the entire Project, including all areas of disturbance. Prior to beginning site mobilization associated with any Project element, the Project owner would submit to the Compliance Project Manager (CPM) a copy of the Notice of Intent for Construction (and any other necessary documents) accepted by the SWRCB and obtain CEC CPM approval of the construction activity SWPPP for the Project, as well as any other documents required by the permit.
- Prior to site mobilization activities for any Project element, CPM approval for a site-specific DESCP that addresses all Project elements would be obtained.
- Prior to beginning facility operation, CPM approval for a site-specific Facility Operation DESCP that addresses all plant site elements will be obtained. The plan shall include detailed plans and information for all of the following:
  - A narrative discussion and appropriate site maps and plans showing how stormwater and sediment erosion will be managed during plant operation, including locations of permanent BMPs to be employed.

- A narrative discussion of what permanent BMPs and materials management practices will be employed at the site.
- A narrative discussion and schedule detailing how and when inspections and maintenance of all plant operation stormwater management structures will be undertaken.

- Prior to the start of Project construction, evidence of a valid water supply agreement for supply for both the Project construction period and the expected life of the Project will be provided. Project construction will not start until evidence of a valid water supply contract is provided to the CPM.

5.15.5 Laws, Ordinances, Regulations, and Standards

Federal, state, and local LORS applicable to water resources and anticipated compliance are discussed in this subsection and are summarized in Table 5.15-2.

Table 5.15-2. LORS for Water Resources

Laws, Ordinances, Regulations, and Standards	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
Federal			
CWA of 1977 (including 1987 amendments) Section 402, 33 USC Section 1342, 40 CFR Parts 112, 122 – 131	The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA regulates both direct and indirect discharges, including stormwater discharges from construction and industrial activities.	EPA, CVRWQCB	Section 5.15.5.2
CWA § 303 and 305, TMDL Program	CWA 303(d) established the TMDL process to guide the application of state water quality. CWA Section 305(b) requires states to develop a report that assesses statewide surface water quality. Both CWA requirements are addressed through the development of a 303(d)/305(b) Integrated Report, which provides both an update to the 303(d) list and a 305(b) assessment of statewide water quality.	CVRWQCB	Section 5.15.5.2
CWA § 401, Water Quality Certification	Requires applicant for a federal license or permit to conduct any activity that may result in a discharge to navigable waters to provide Section 401 certification. The certification, made by the state in which the discharge originates, declares that the discharge will comply with applicable provisions of the CWA, including water quality standards and requirements.	CVRWQCB	Section 5.15.5.2, Section 5.17.2
CWA § 404, Regulatory Programs; 33 CFR 323 and 328	CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States, which include oceans, bays, rivers, streams, lakes, ponds, and wetlands. Project proponents must obtain a permit from USACE for all discharges of dredged or fill material into waters of the United States before proceeding with a proposed activity.	USACE	Section 5.15.5.2, Section 5.4.5.1

Laws, Ordinances, Regulations, and Standards	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
State			
Porter-Cologne Water Quality Control Act 1998; CWC § 13000 - 14957; Division 7, Water Quality	Requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters, including identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures.	CEC, CVRWQCB, SWRCB	Section 5.15.5.2
CVRWQCB Basin Plan	To develop water quality standards consistent with the uses of a water body, the CVRWQCB classifies existing and potential beneficial uses for the Central Valley waters as part of their Basin Plan.	CVRWQCB	Section 5.15.5.2
CWC Division 7, Article 4 §§13271 - 13272; CCR, Title 23 §§2250 - 2260	Requires reporting of the releases of specified reportable quantities of hazardous substances or sewage and releases of specified quantities of oil or petroleum products when the release is into, or where it will likely discharge into, waters of the State.	CVRWQCB, California Office of Emergency Services	Section 5.15.5.2
CCR, Title 23, Waters, Division 3 — SWRCB and RWQCBs	These regulations implement provisions of the CWC. Among other things, the regulations address water rights, implementation of the federal CWA, discharges to land, underground tanks, and waste discharge requirements/NPDES permits.	CVRWQCB	Section 5.15.5.2
PRC Section 25523(a), 20 CCR §§1752, 1752.5, 2300 – 2309, and Chapter 2 Subchapter 5. Article 1, Appendix B, Part (1)	Provides for the inclusion of requirements in the CEC's decision on an Application for Construction to ensure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection.	CEC	Section 5.15.5.2
Local			
Alameda County Stormwater Management Plan	The Department of Environmental Health developed a formal agreement with Public Works Agency to implement the industrial and commercial component of the Alameda Countywide Clean Water Program's Stormwater Management Plan for unincorporated Alameda County.	Alameda County Department of Public Works	Section 5.15.5.2

Laws, Ordinances, Regulations, and Standards	Requirements/Applicability	Administering Agency	Application for Certification Section Explaining Conformance
East County Area Plan	Relevant components of the East County Area Plan to meet water quality goals for surface and groundwater address similar components as in the Alameda County General Plan.	Alameda County Department of Public Works	Section 5.15.5.2

CCR = California Code of Regulations

CFR = Code of Federal Regulations

CWC = California Water Code

EPA = U.S. Environmental Protection Agency

PRC = Public Resources Code

USACE = U.S. Army Corps of Engineers

USC = United States Code

5.15.5.1 Federal LORS

This section describes in detail the federal LORS potentially applicable to the Project. In general, federal LORS applicable to water resources for the Project are implemented by the SWRCB and the CVRWQCB.

5.15.5.1.1 Clean Water Act of 1977, as amended, §402, 33 USC §1342; 40 CFR Parts 112, 122 through 131

The primary objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters. Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand, total suspended solids, oil and grease, and pH; and "nonconventional" pollutants, including any pollutant not identified as either conventional or priority.

The CWA regulates both direct and indirect discharges. The NPDES program (CWA § 402) regulates direct discharges into waters of the United States. NPDES permits set discharge limitations based on applicable state or federal water quality standards and industry-specific, technology-based limitations. In 1987, the CWA was amended to include a program to address stormwater discharges from industrial and construction activities. In California, the NPDES program, including stormwater permitting, is delegated to the SWRCB and the nine RWQCBs. The CVRWQCB administers both the NPDES and stormwater discharge permits in the Project area.

5.15.5.1.2 Clean Water Act Sections 303 and 305

The State adopts water quality standards to protect beneficial uses of state waters as required by CWA 303 TMDL Program and the Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act). CWA 303(d) established the TMDL process to guide the application of state water quality standards (see the discussion of state water quality standards in the following sections). To identify candidate water bodies for TMDL analysis, a list of water-quality–limited streams is generated. Such streams are considered to be impaired by the presence of pollutants, including sediments, and to have no additional capacity for these pollutants.

In addition to the impaired water body list required by CWA Section 303(d), CWA Section 305(b) requires states to develop a report that assesses statewide surface water quality. Both CWA requirements are addressed through the development of a 303(d)/305(b) Integrated Report, which provides both an update to the 303(d) list and a 305(b) assessment of statewide water quality. The SWRCB's 2020-2022 California Integrated Report (SWRCB 2022) was based on Integrated Reports from each of the nine RWQCBs. After approval of the Section 303(d) list portion of the California Integrated Report by the SWRCB, the complete report was approved by the EPA on May 11, 2022.

5.15.5.1.3 Clean Water Act Section 401

Under the CWA, USACE Section 404 permits are subject to RWQCB Section 401 Water Quality Certification. Section 401 of the CWA requires certification from the RWQCB that the proposed Project is in compliance with established water quality standards. Projects that have the potential to discharge pollutants are required to comply with established water quality objectives. Section 401 provides the SWRCB and the RWQCB with the regulatory authority to waive, certify, or deny any proposed federally permitted activity, which could result in a discharge to waters of the state. To waive or certify an activity, these agencies must find that the proposed discharge will comply with state water quality standards. According to the CWA, water quality standards include beneficial uses, water quality objectives, and compliance with the EPA's anti-degradation policy.

5.15.5.1.4 Clean Water Act Section 404

Activities resulting in the dredging or filling of jurisdictional waters of the United States require authorization under a Section 404 permit issued by the USACE. The USACE may grant authorization under either an individual permit or a nationwide permit.

5.15.5.2 State LORS

The administering agencies for the state LORS are the CEC, the SWRCB, and the CVRWQCB. The Project will comply with the applicable state LORS related to water use and quality.

5.15.5.2.1 Porter-Cologne Water Quality Control Act; CWC, Division 7, Chapter 4 §13260 et seq.

The Porter-Cologne l Act, Water Code §13000 et seq. requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect state waters. Those criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. Water quality criteria for the proposed Project area are contained in the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin (Basin Plan), which was adopted in 1975 and is continually being revised, with the most current revision being the fifth edition (CVRWQCB 2019). This plan sets numerical and narrative water quality standards controlling the discharge of wastes to the state's waters and land.

CWC Division 7, Chapter 4 establishes the regulatory authority of the SWRCB and RWQCBs to issue Waste Discharge Requirements (WDRs) for any discharge with the potential to impact state water quality. The code requires the filing of a Report of Waste Discharge (ROWD) and provides for the issuance of WDRs with respect to the discharge of any waste that can affect the quality of the waters of the state. The WDRs will serve to enforce the relevant water quality protection objectives of the CVRWQCB's Water Quality Control Plan and federal, technology-based effluent standards applicable to the proposed discharge of waste must comply with the groundwater protection and monitoring requirements of the Resource Conservation and Recovery Act. Discharge of waste earthen material into surface waters resulting from land disturbance may require the filing of a ROWD (Water Code §13260[a]) and provides for the issuance of WDRs with respect to the discharge of any waste that can affect the quality of the waters of the state.

The administering agencies for the above regulation are the CEC, SWRCB, and CVRWQCB.

5.15.5.2.2 California Construction Stormwater Program

Construction activities that disturb 1 acre or more are required to obtain coverage under California's General Permit for Discharges of Stormwater Associated with Construction Activity, Water Quality Order 99-08-DWQ (General Construction Permit CAS 000002). Activities subject to permitting include clearing, grading, stockpiling, and excavation.

The General Construction Permit requires the development and implementation of an SWPPP. The SWPPP specifies BMPs that will reduce or prevent construction pollutants from leaving the site in stormwater runoff and will also minimize erosion associated with Project construction. The SWPPP must contain site map(s) that show the construction site perimeter; existing and proposed structures and roadways; stormwater collection and discharge points, general topography both before and after construction; and drainage patterns across the site. Additionally, the SWPPP must describe the monitoring program to be implemented.

5.15.5.2.3 CVRWQCB Basin Plan

Water quality in streams and aquifers of the region is guided and regulated by regional Basin Plans. State policy for water quality control is directed at achieving the highest water quality consistent with the maximum benefit to the people of the state. To develop water quality standards consistent with the uses of a water body, the regional water boards classify existing and potential beneficial uses for waters as part of their Basin Plans. The Project is under the jurisdiction of the CVRWQCB, which established regulatory standards and objectives for water quality in its Basin Plan (CVRWQCB 2019).

5.15.5.2.4 CWC, Division 7, Chapter 4, Article 4 §§13271 – 13272 and CCR Title 23 §§ 2250 through 2260

These code sections require reporting of releases of specified reportable quantities of hazardous substances or sewage (§ 13271) and releases of specified quantities of oil or petroleum products (§ 13272), when the release is into, or where it will likely discharge into, waters of the state. For releases into or threatening surface waters, a “hazardous substance” and its reportable quantities are those specified in 40 CFR § 116.5, pursuant to § 311(b)(2) of the Federal CWA, 33 USC § 1321(b)(2). For releases into or threatening groundwater, a “hazardous substance” is any material listed as hazardous pursuant to the California Hazardous Waste Control Act, Health & Safety Code §§ 25100 et seq., and the reportable quantities are those specified in 40 CFR Part 302. The administering agencies for this regulation are the CVRWQCB, and the California Office of Emergency Services. Although such releases are not anticipated, the Project would comply with the reporting requirements if necessary. A detailed discussion of reporting and compliance requirements is provided in Sections 5.5, Hazardous Materials, and 5.14, Waste Management.

5.15.5.2.5 California PRC §25523(a), 20 CCR §§1752, 1752.5, 2300 – 2309, and Chapter 2 Subchapter 5, Article 1, Appendix B, Part (1)

The PRC provides for the inclusion of requirements in the CEC’s decision on an Application for Construction to assure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection. The administering agency for this regulation is the CEC.

5.15.5.3 Local LORS

Alameda County is the administering agency for the local LORS. The following policies are to ensure the availability of an adequate and safe water supply and to ensure the maintenance of high-quality water in water bodies and aquifers.

5.15.5.3.1 Alameda County Stormwater Management Plan

The Department of Environmental Health has a formal agreement with the Alameda County Public Works Agency to implement the industrial and commercial component of the countywide Clean Water Program’s Stormwater Management Plan. The program includes inspection of facilities in the unincorporated county area for compliance with clean water regulations.

5.15.5.3.2 East County Area Plan

This section presents the components of the East County Area Plan that support water quality goals for surface and groundwater are listed below (Alameda County 2000). These policies address similar components as in the Alameda County General Plan.

Policies

Policy 306: The County shall protect surface and groundwater resources by:

- preserving areas with prime percolation capabilities and minimizing placement of potential sources of pollution in such areas;
- minimizing sedimentation and erosion through control of grading, quarrying, cutting of trees, removal of vegetation, placement of roads and bridges, use of off-road vehicles, and animal-related disturbance of the soil;
- not allowing the development of septic systems, automobile dismantlers, waste disposal facilities, industries utilizing toxic chemicals, and other potentially polluting substances in creekside, reservoir, or high groundwater table areas when polluting substances could come in contact with flood waters, permanently or seasonally high groundwaters, flowing stream or creek waters, or reservoir waters; and,
- avoiding establishment of excessive concentrations of septic systems over large land areas.

Implementation Programs

Program 108: The county shall implement all federal, state and locally imposed statutes, regulations, and orders that apply to storm water quality. Examples of these include:

- (NPDES stormwater permit issued by the CVRWQCB to the Alameda County Urban Runoff Clean Water Program and amendments thereto;
- California NPDES General Permit for Stormwater Discharges (General Industrial Permit, General Construction Permit) and amendments thereto;
- Coastal Zone Management Act;
- Coastal Zone Act Reauthorization Amendments;
- Water Quality Control Plan, San Francisco Bay Basin Region (Basin Plan) and amendments thereto; and
- Letters issued by the RWQCB under the Porter-Cologne Act.

Program 109: The county shall endeavor to minimize herbicide use by public agencies by reviewing existing use and applying integrated pest management principles, such as mowing and mulching, in addition to eliminating or scaling back the need for vegetation control in the design phase of a project.

Program 110: The county shall conform with the Alameda County Flood Control and Water Conservation District's (Zone 7) Wastewater Management Plan and the RWQCB San Francisco Bay Basin Plan.

5.15.6 Agency Contacts, Permits, and Permit Schedule

Agency contacts and required permits are listed in Table 5.15-3.

Table 5.15-3. Permits and Agency Contacts for Water Resources

Permit or Approval	Agency Contact	Schedule
Notice of Intent for coverage under the California General Stormwater Permit for Construction Activities	Rich Muhl Senior Environmental Scientist CVRWQCB 11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670-6114 (916) 464-4749 Richard.Muhl@waterboards.ca.gov	The complete Notice of Intent must be filed 2 weeks prior to construction start for coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity. An SWPPP will be prepared and submitted prior to beginning construction.
Grading Permits	Albert Lopez, Planning Director Alameda County Planning and Community Development Agency (510) 670-5400 Albert.lopez@acgov.org	File with county together with building permit prior to beginning of construction.
CWA 404 permit, if required	USACE San Francisco District 450 Golden Gate Ave., 4th Floor San Francisco, CA 94102 (415) 503-6795 (office) cespn-rg-info@usace.army.mil	Prior to construction, after 401 certification
CWA 401 certification, if required	Lynn Coster Program Manager CVRWQCB 11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670-6114 (530) 224-2437 Lynn.Coster@waterboards.ca.gov	Prior to construction, after Alquist-Priolo approval by CEC

5.15.7 References

Alameda County. 2000. *East County Area Plan*. Adopted May 1994. Modified by passage of Measure D, effective December 22, 2000. Oakland, CA

Burns & McDonnell Western Enterprises, Inc. 2025. Hydrology & Hydraulics Report. Prepared for Viracocha Wind LLC, Viracocha Hill BESS, Alameda County, California. Project No. 177321.

California Department of Water Resources (DWR). 2006. California's Groundwater Bulletin 118, San Joaquin Valley Groundwater Basin Tracy Subbasin.

Central Valley Regional Water Quality Control Board (CVRWQCB). 2019. Water Quality Control Plan for the Sacramento River and the San Joaquin River Basins. Fifth Edition, Revised February 2019.

State Water Resources Control Board (SWRCB). 2022. *2020-2022 California Integrated Report*. Available: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html. Accessed: December 9, 2024.

State Water Resources Control Board (SWRCB). 2024 Central Valley Sacramento and San Joaquin River Basin Plan Beneficial Uses. GIS Data, available: https://hub.arcgis.com/maps/12e6d2475f0a45dbbca22453114e9ce6/about. Accessed December 9, 2024.

U.S. Department of Agriculture (USDA). 2024. Natural Resources Conservation Service Web Soil Survey. Available: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed. December 30, 2024.

Western Regional Climate Center (WRCC). 2024. Tracy Pumping Plant, California (049001). Period of Record Monthly Climate Summary. Available: TRACY PUMPING PLANT, CALIFORNIA - Climate Summary. Accessed January 24, 2025.

5.16 Wildfire

This section describes the potential effects of the construction and operation of the Viracocha Hill Battery Energy Storage System Project (Viracocha Hill BESS or Project) may have on potential wildfire impacts. The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

The information presented in this section is based on a review of existing resources and applicable laws, regulations, guidelines, and standards. Publicly available sources were reviewed in the development of this section, including the National Fire Prevention Association (NFPA) Standards, Chapters 12 and 49 of the California Fire Code (CFC), Chapter 42 of the California Public Resources Code (PRC), California Department of Forestry and Fire Prevention (CAL FIRE) Fire and Resource Assessment Program (FRAP) database, Alameda County General Plan (ACGP), Alameda County Code of Ordinances, and Alameda County Local Hazard Mitigation Plan (LHMP). This evaluation of wildfire includes the following elements:

- Section 5.16.1 describes the existing environment that could be affected, including vegetation and fuels, climate, topography, fire hazard severity zone (FHSZ) designation, fire history, and emergency response and fire protection.
- Section 5.16.2 identifies potential environmental impacts that may result from Project construction and operation.
- Section 5.16.3 discusses potential cumulative effects.
- Section 5.16.4 identifies mitigation measures that should be considered during Project construction and operation.
- Section 5.16.5 presents laws, ordinances, regulations, and standards (LORS) applicable to wildfire.
- Section 5.16.6 identifies regulatory agencies and contacts.
- Section 5.16.7 describes permits required and anticipated schedules for the proposed Project related to wildfire.
- Section 5.16.8 provides references used to develop this section.

5.16.1 Affected Environment

5.16.1.1 Regional Setting

The Project site is in eastern Alameda County, California, on the east-facing slopes of the Diablo Mountain Range that extend from the Altamont Pass area at the ridgeline into the San Joaquin Valley to the east. This area is characterized by primarily rural and open space with varied terrain, including steep slopes, valleys, and ridgelines. Wildfire is a seasonal threat in Alameda County and is particularly concerning in the dry season, when high temperatures, dry fuel, and sometimes extreme wind events, known locally as Diablo winds, heighten fire danger.

5.16.1.2 Project Site

The proposed Project would be located in Alameda County in a portion of Assessor Parcel Number (APN) 99B-7300-1-5 approximately 0.8 mile south of the Bethany Reservoir, approximately 0.15 mile north of Altamont Pass Road, and approximately 3.3 miles west of the city limits of Tracy, the nearest municipality.

The Project site is in a rural, sparsely developed area with limited existing infrastructure. Land uses in the immediate vicinity of the proposed Project include undeveloped rural agricultural lands, multiple high-voltage transmission lines and electrical substations, rural roads, and railroad lines. The nearest residence is approximately 1.75 miles southeast of the Project site.

5.16.1.3 Vegetation/Fuels

As discussed in Section 3.2, Biological Resources, vegetation communities on the Project site are non-native annual grasslands that extend from the San Joaquin Valley bottom to the ridgeline at the Altamont Pass area. The non-native grasslands in the Project area are used as pasture for livestock and occur as continuous expanses of grass only broken up by roads, waterways, or rocky areas. Non-native annual grasslands are available to burn when the grasses have fully cured, which occurs from April to May, and can carry fast-moving fire during these seasonal droughts. Adaptations of this vegetation community to the climate include specialized roots, stems, and leaves. The likelihood of cured grass igniting and sustaining fire is highly dependent on the amount of moisture in the soil and air. Wildland fires in the grassland environments found in the Project area are more common during the summer because the vegetation readily ignites, and fuel volumes are sufficient and continuous enough to sustain the spread of a wildfire.

5.16.1.4 Climate

Climate in the Project area is characterized as a hot-summer Mediterranean climate, with cool, wet winters and hot, dry summers. Weather data for the Project site comes from the Altamont Remote Automated Weather Station (RAWS) located near the ridgeline at the Altamont Pass area approximately 5 miles south of the Project site. Temperatures at the Altamont RAWS from December 2023 to November 2024 ranged from average lows of 45 degrees Fahrenheit (F) during the coldest months to average highs of 94 degrees F during the hottest months. Maximum temperatures exceeded 90 degrees F between May and October. Relative humidity at the Altamont RAWS ranged from an average of 36 percent during the driest months to 81 percent during the wettest months. Minimum average relative humidity in the Project area was below 15 percent from May to November. Precipitation fell between November and May, decreased to zero by June, and resumed falling in October. Winds at the Altamont RAWS typically were out of the southwest. Average wind speeds varied between 6 and 19 miles per hour (mph) between December 2023 and November 2024 (WRCC 2024). Average daily wind speeds above 15 mph occurred from May to August (WRCC 2024). Maximum wind gusts exceeding 50 mph occurred between February and September (WRCC 2024). Average wind speeds and maximum wind gusts were determined based on data available between December 1, 2023, and November 30, 2024 (that is, in the 12-month period prior to this application being written). Regarding wind records, the Altamont RAWS is located at an elevation approximately 930 feet higher than the Project site and is closer to the ridgeline at the Altamont Pass area than the Project site and is therefore subject to stronger winds then would be expected at the Project site (WRCC 2024).

Weather conditions conducive to the ignition and spread of a wildfire occur from March to October on average. Winds can sustain fire spread if a fire has ignited. In March, there may be a short window during the daytime when temperatures are high enough and relative humidities are low enough that fire can spread in the grasses. This window increases as the year progresses, peaking in July and August during the hottest and driest periods of the year. This window decreases as temperatures decrease and relative humidities increase. The Project site is subject to periodic extreme fire weather conditions that occur throughout Alameda County associated with drought conditions and hot, dry Diablo winds from the northeast when wind speeds may exceed 50 mph (WRCC 2024).

5.16.1.5 Topography

Topography and terrain influences fire risk by affecting fire spread rates. In the absence of wind, steep terrain results in faster fire spread up-slope and slower fire spread down-slope. Flat terrain tends to have negligible effect on fire spread rate, resulting in fires that are spread by wind. The Project site is generally level and is on an open rise with adjacent moderately rolling terrain in the Diablo Range. Elevation on the Project site ranges from approximately 400 to 450 feet. The Project site does not contain and is not adjacent to narrow canyons, box canyons, chimneys, or other terrain features that would exacerbate a wildfire burning near the site. The hillsides surrounding the Project site are short (less than 50 feet in elevation change between the bottom and top of the hill), and extreme fire behavior driven by long steep hillsides is not anticipated on these short slopes.

5.16.1.6 Fire Hazard Severity Zone Designation

The FRAP database includes map data documenting areas of significant fire hazards in California. These maps categorize geographic areas in California into different FHSZs. The classifications include Moderate, High, and Very High FHSZs. CAL FIRE uses FHSZs to classify anticipated fire-related hazards for California and includes classifications for State Responsibility Areas (SRAs), Local Responsibility Areas (LRAs), and Federal Responsibility Areas (FRAs). Fire hazard severity classifications consider vegetation, topography, weather, crown fire production, and ember production and movement.

The Project site is located within an SRA (Figure 5.16-1; CAL FIRE 2024a) and therefore CAL FIRE is responsible for fire prevention and suppression within the Project site. The Project site and surrounding area are designated as a High FHSZ (Figure 5.16-2; CAL FIRE 2023). The nearest Moderate FHSZ is located approximately 0.7 mile southwest of the Project site at the Waste Management Altamont Landfill and Resource Recovery facility. The nearest Very High FHSZ is located approximately 6.8 miles south of the Project site.

The California Public Utilities Commission (CPUC) has published High Fire Threat District (HFTD) maps. The HFTD maps show areas where there is an increased risk, including likelihood and potential impacts on people and property, for utility-associated wildfires. The Project site and surrounding area are not located within a Tier 2 (High) or Tier 3 (Extreme) HFTD (CPUC 2023).

5.16.1.7 Fire History

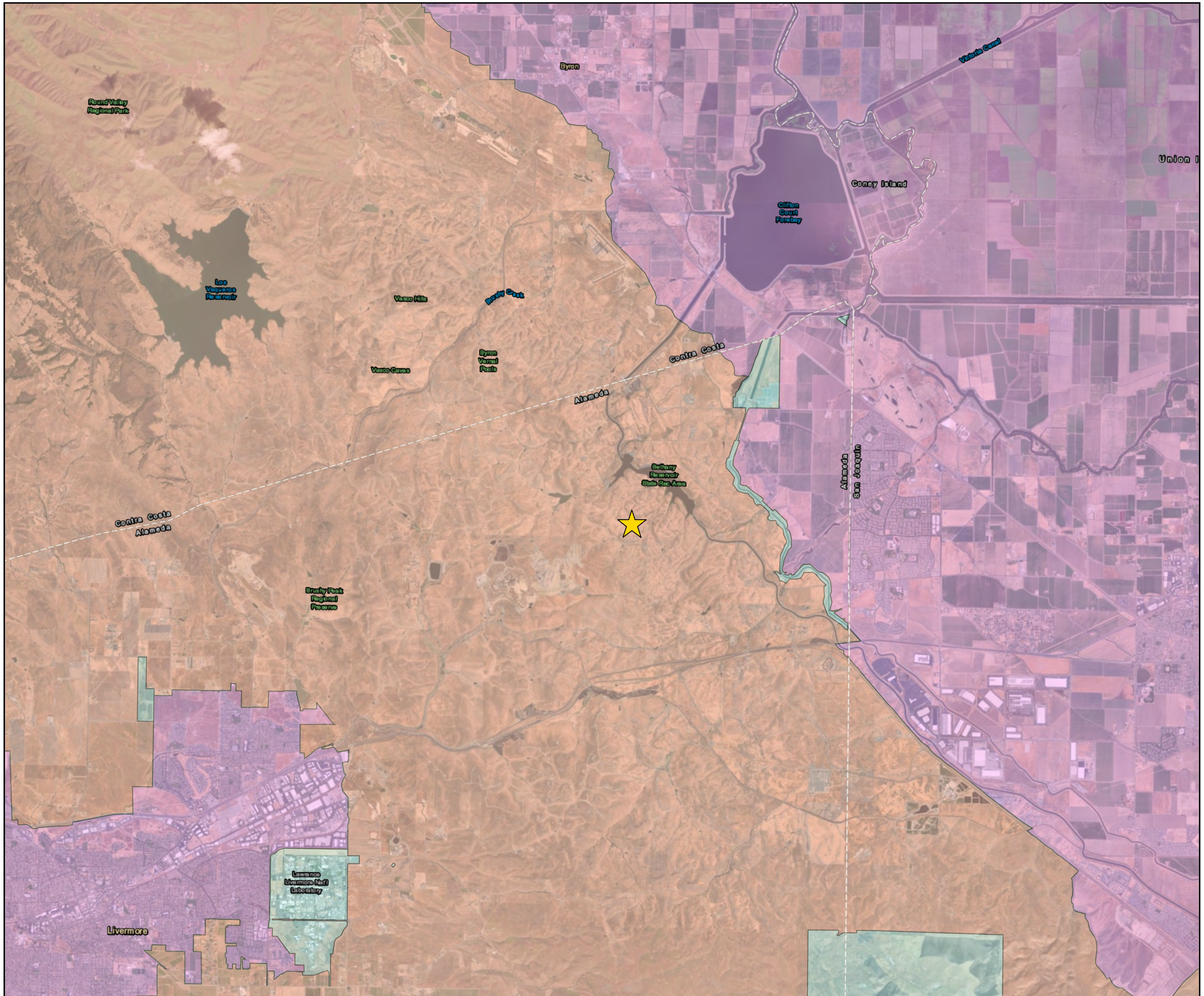
Fire history is a critical component of evaluating how prone to ignition and fire spread a landscape is. Fire history data provide valuable information, including fire spread, fire frequency, most vulnerable areas, and notable ignition sources. In turn, this understanding of why fires occur in an area and how they typically spread can then be used for planning. This fire history analysis uses the FRAP database, which provides a summary of recorded fires and fire perimeter data dating to the late 1800s. The fire perimeter data, especially before the mid-20th century, only includes fires over 10 acres in size and therefore are incomplete (Syphard and Keeley 2016). However, the fire perimeter data can be used to show whether large fires have occurred in the Project area and provide information on potential future fire risk.

There have been 60 fires within 5 miles of the Project site from 1950 to 2024 (CAL Fire 2024b and CAL Fire 2024c), of which 7 have burned within 1 mile of the Project site. No fires have burned within the Project site; however, one fire perimeter extended adjacent to the eastern boundary of the parcel in which the Project would be located.

5.16.1.8 Emergency Response and Fire Protection

The Project site is located within an SRA (Figure 5.16-1; CAL FIRE 2024a) and therefore CAL FIRE is responsible for fire prevention and suppression within the Project site. The nearest CAL FIRE station is Station 26 – Castle Rock approximately 6.67 miles southeast of the Project site in Tracy in San Joaquin County.

South San Joaquin County Fire Authority (SSJCFA) Station 94 is adjacent to CAL FIRE Station 26 – Castle Rock. Alameda County Fire Department (ACFD) also includes the Project site in its service area maps (ACFD 2024a). The nearest ACFD fire station is Station 20 approximately 17 miles southwest of the Project site in Livermore (ACFD 2025). Although CAL FIRE would be the authority having jurisdiction (AHJ) at the Project site, CAL FIRE, SSJCFA, and ACFD have mutual aid agreements. Under a mutual aid agreement, the fire agencies agree to pool their resources and respond to calls within each other's service territory.



Legend

- Viracocha Hill BESS Project
- Federal Responsibility Area
- State Responsibility Area
- Local Responsibility Area

Source:
1) ESRI Aerial Images

N

0 2 4
Miles

Figure 5.16-1
State Responsibility Areas
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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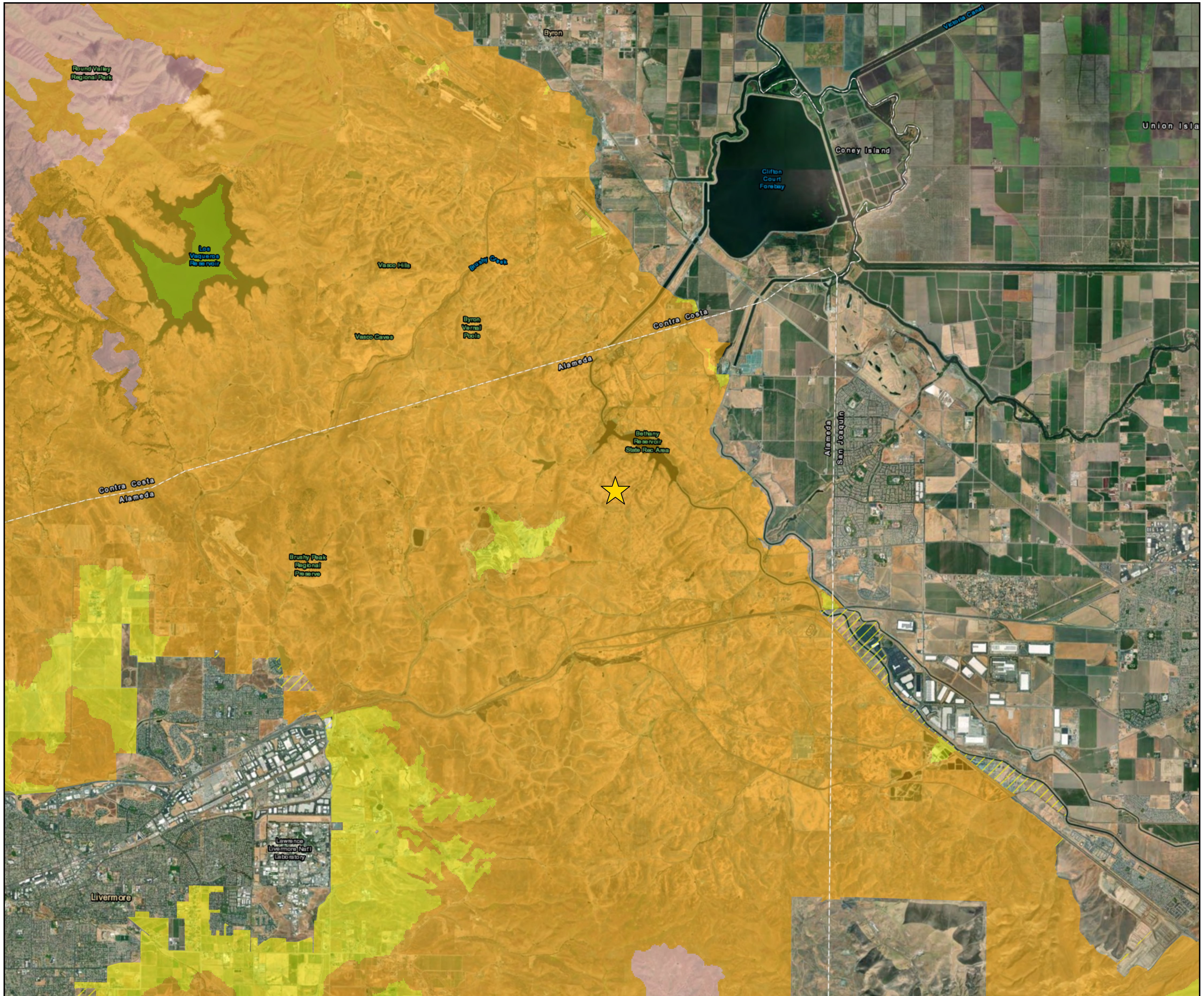

Legend

Viracocha Hill BESS Project

Fire Hazard Severity Zone in Local Responsibility Area - Reclassified from SRA

Moderate

High

Fire Hazard Severity Zone in State Responsibility Area - Effective April 1, 2024

Moderate

High

Very High

Source:
1) ESRI Aerial Images

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Figure 5.16-2
State Fire Hazard Severity Zones
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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Table 5.16-1 summarizes the location, apparatus, staffing, maximum travel distance, and estimated travel time to the Project site for CAL FIRE Station 26 – Castle Rock, SSJCFA Station 94, and ACFD Station 21. Travel distances are derived from Google Maps road data, while estimated travel times are calculated using an assumed response speed of 35 mph, consistent with NFPA Standard 1710 (Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments) and the NFPA-recognized Insurance Services Office (ISO) Public Protection Classification Program's Response Time Standard formula (Time=0.65 + 1.7[Distance]). The ISO response time standard formula discounts speed for intersections, vehicle deceleration, and vehicle acceleration and does not include turnout time.

Table 5.16-1. Fire Station Summary

Station Name	Location	Apparatus	Staffing	Maximum Travel Distance	Anticipated Travel Time to Project Site
CAL FIRE Station 26 – Castle Rock	16502 W Schulte Rd, Tracy, California 95377	1 Engine	3 – Full-time firefighters	13.6 miles	24 minutes
SSJCFA Station 94	16502 W Schulte Rd, Tracy, California 95377	1 Type 1 pumper ALS unit and 1 Type 3 OES Engine	3 – Full-time Firefighters	13.6 miles	24 minutes
Station 20	7000 East Ave, Livermore, California	1 Type 3 Engine, 2 - Type IV Apparatus (Patrols), 1 Hazardous Materials Unit, and 1 Ambulance	8– Full-time Firefighters	12.1 miles	21 minutes

ALS = Advanced Life Support

OES = Office of Emergency Services

Sources: ACFD 2025c and SSJCFA 2024

CAL FIRE does not have response time performance objectives and the Countywide Elements of the ACGP do not have recommended response times. The Alameda County Emergency Operations Plan (EOP) provides an overview of the County's approach to emergency operations and identifies emergency response policies, describes the response and recovery organization, and assigns specific roles and responsibilities to County departments, agencies, and community partners (Alameda County 2012). The EOP identifies the Sheriff's Office as the department responsible for managing and coordinating evacuations in unincorporated areas of the county. Several private utility service roads lead from the vicinity of the Project site to major roadways, including Altamont Pass Road, West Grant Line Road, Interstate (I)-580, and I-205, that could be used for evacuation.

5.16.2 Environmental Analysis

The potential environmental impacts of construction, operation, and maintenance of the Project related to wildfire are discussed in the following sections.

5.16.2.1 Significance Criteria

Appendix G of the California Environmental Quality Act (CEQA) Guidelines identifies the following criteria for determining significance of environmental impacts related to wildfire. An impact would be considered significant if the proposed Project is located in or near SRAs or lands classified as Very High FHSZs and would:

1. Substantially impair an adopted emergency response plan or emergency evacuation plan.
2. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
3. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
4. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, because of runoff, post-fire slope instability, or drainage changes.

5.16.2.2 Impacts on Wildfire

Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

Less than Significant

Although the Project is located in an SRA and a High FHSZ, the Project would not substantially impair an emergency response plan or emergency evacuation plan, including the Alameda County Emergency Operations Plan and the Alameda County Local Hazard Mitigation Plan. As noted in the Alameda County Emergency Operations Plan, the Sheriff's Office is responsible for managing and coordinating evacuations in unincorporated areas of the county (Alameda County 2012). Evacuation routes may include interstate, state, and surface roads, and will be chosen based on the relative safety of roadway infrastructure and current traffic conditions. Existing roadways in the vicinity of the Project that could be used during evacuations include Altamont Pass Road, West Grant Line Road, I-580, and I-205 as well as maintained dirt utility service roads.

Construction vehicles, equipment, and workers would access Project construction areas by using existing paved public roads and existing dirt service roads. Construction of the Project would generate an additional temporary 184 trips per day on area roadways. This number of trips is easily accommodated on existing roadways and would not interfere with emergency access. Project site access and any needed modifications to existing dirt service roads would be completed prior to the start of construction so that emergency access is maintained at all times. In addition, no road closures are anticipated for Project construction. Construction parking and staging would be within the Project footprint.

Project operation and maintenance also would generate only a small number of trips that easily would be accommodated on existing roadways. The completed Project will not have onsite staff and will be monitored remotely. Monthly site visits by up to two staff would occur for facility maintenance. No closures of existing roads would be anticipated during Project operation and maintenance. The Project would be designed to provide appropriate emergency access during operations and maintenance.

Therefore, the Project would not substantially impair an adopted emergency response plan or emergency evacuation plan, and the impact will be less than significant. Refer to Section 5.5, Hazardous Materials Handling, for further information and analysis of site-specific emergency response and evacuation plans.

Due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less than Significant

Construction

As described in Section 5.16.1, although the Project would be constructed on a relatively level site, it is in an area of non-native annual grasslands that can carry fast-moving fire when cured. In addition, the Project site can be subject to wind speeds capable of spreading wildfire. Construction of the Project could result in wildfire risk due to the potential for sparks from construction equipment and vehicles and the increased human activity. During construction activities, multiple crews would be working on the site with various equipment and vehicles. The total number of construction workers on a given day would range from 12 to 78 workers, depending on the phase of construction. Construction activities would introduce potential ignition sources to the Project site, including the use of heavy machinery and the potential for sparks during welding activities or other hot work.

Standard fire prevention practices and equipment would be used during construction. Fire extinguishers and one or more portable water tanks for firefighting would be maintained on the Project site during construction. Project construction would comply with applicable local, county, and state requirements that reduce the possibility of fires during construction activities, such as requirements for maintenance of mechanical equipment, handling and storage of flammable materials, and cleanup of spills of flammable materials. Construction areas would be cleared of vegetation prior to the start of construction work activities. Construction personnel would be trained in fire-safe actions. Conditions would be assessed during Red Flag Warning and Fire Weather Watch events, and construction activities would be modified as appropriate, for example assigning fire patrols or temporarily stopping certain construction activities. These standard practices and equipment would minimize the risk of fire from construction activities and reduce the risk of fire or smoke spreading to adjacent areas. Therefore, Project construction activities would not be expected to exacerbate wildfire risk such that construction workers would be exposed to the uncontrolled spread of a wildfire or pollutant concentrations from a wildfire. Therefore, construction impacts would be less than significant.

Operation

As described in Section 5.16.1, although the Project would be constructed on a relatively level site, it is in an area dominated by non-native annual grasslands that can serve as a potential fuel source and carry fast-moving fire when cured. In addition, the Project site can be subject to wind speeds capable of spreading wildfire. Development of the Project would introduce new potential sources of ignition, including the BESS modules, energized substation equipment, the gen-tie line, and additional vehicles traveling on internal and external roads.

However, the Project would not have onsite operations or maintenance staff but would be remotely monitored offsite. The Project would have up to two staff working onsite out of an operations and maintenance building once a month and up to one major maintenance inspection would be expected every 4 years. In addition, the Project structures, roadways, and facilities would be designed, constructed, operated, and maintained in compliance with applicable local, regional, State, and Federal requirements (Section 5.16.5) related to fire safety, emergency access, and evacuation, as well as building materials, setbacks, and defensible space requirements for development in fire hazard areas. The local, State, and Federal rules, regulations, and policies included in Section 5.16.5 set forth minimum standards for development strategies, building materials, and systems and fire prevention strategies for development in fire hazard areas to reduce the risk of wildfire damage and losses. The codes include the Alameda County Fire Code (ACFC), which adopts the 2022 CFC, including Section 1207 Electrical Energy Storage Systems and associated requirements for fuel modification and defensible space for fire prevention and safety. Materials would meet the fire and smoke rating requirements of NFPA 255.

The Project would have onsite portable and fixed fire protection and suppression systems and would be supported by local fire protection services during operations. The fire protection system is anticipated to include a primary diesel-powered fire water pump and approximately 28,000 gallons of fire water stored onsite in one or more water tanks that would ensure an adequate water supply for fire protection. Prior to start of operations, the tank would be filled by trucking in water via tanker trucks. The tank would be topped off as needed. In addition, portable carbon dioxide (CO_2) and dry chemical extinguishers would be located throughout the facility, in accordance with NFPA 10. The entire facility within the perimeter of the security fence would be maintained free of vegetation.

Employees would be provided with fire safety training, including instruction in fire prevention, use of portable fire extinguishers, and reporting fires to the local fire department. Employees would only suppress fires in an incipient stage. Fire drills would be conducted at least twice each year.

The Alameda County Fire Department Station 20 would provide the primary fire protection, inspections, and firefighting services for the Project (ACFD 2025). The Alameda County Fire Chief would perform a final fire safety inspection upon completion of construction and, thereafter, would conduct regular fire safety inspections. It is expected that, prior to startup, the County Fire Chief would visit the Project site to become familiar with the site and with the facility's emergency response procedures.

The Project would include a stormwater drainage system sized to accommodate 3.93 inches of precipitation in a 24-hour period (100-year storm event) and to comply with applicable local codes and standards. If the water stored onsite were used for fighting a fire, this water would be contained by the Project's stormwater control system and would not expose people or structures to risks as a result of runoff.

Because the Project would not have permanent occupants during operation and maintenance, would be designed and operated in compliance with applicable codes and requirements, and would include equipment and practices to prevent and extinguish fires, the Project would not exacerbate wildfire risk such that Project occupants would be exposed to the uncontrolled spread of a wildfire or pollutant concentrations from a wildfire. Therefore, operation impacts would be less than significant.

Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment?

Less than Significant

No fuel breaks would be required for Project construction. Vegetation would be cleared from construction work areas and access routes prior to start of construction work activities. Water trucks would be used during construction activities because fire hydrants and related fire suppression infrastructure will not be present.

The completed Project would include installation and maintenance of associated infrastructure to reduce fire risk. This infrastructure includes access roads adequate to provide emergency ingress and egress; removal of vegetation within the facility fenceline; and fire-fighting equipment such as a water pump, water tank, and fire extinguishers. The environmental impacts of the associated infrastructure are incorporated within the Project analyzed in this document. The facility and associated infrastructure would be designed and operated in compliance with applicable requirements for electrical energy storage systems. Because this infrastructure reduces risks associated with fires, it would not be expected to exacerbate fire risk.

The completed Project also includes a new gen-tie line approximately 1,325-feet-long with approximately three towers. Adequate vegetation clearance would be provided and maintained around all gen-tie structures in compliance with applicable regulations.

Therefore, the installation and maintenance of associated infrastructure would not exacerbate wildfire risk or result in impacts on the environment beyond those already disclosed in this section, and impacts would be less than significant.

Expose people or structures to significant risks, including downslope or downstream flooding or landslides, because of runoff, post-fire slope instability, or drainage changes?

Less than Significant

The potential for landslides, runoff, flooding, drainage changes, and water quality improvements has been analyzed in Sections 5.4, Geological Hazards and Resources, and 5.15, Water Resources. The Project site generally drains from the south and north toward the middle of the Project site and then exits the Project site to the east. No other structures were identified downstream of the Project. The nearest residence is approximately 1.75 miles from the Project and would not be affected by runoff from the Project.

During construction, the Project would require implementation of a Stormwater Pollution Prevention Plan, which would include erosion and sediment control best management practices (BMPs) during construction, thereby reducing site runoff and the potential of erosion and siltation during construction. The Project is on a fairly level site and is not expected to be susceptible to landslides. The Project would include a stormwater drainage system sized to accommodate 3.93 inches of precipitation in a 24-hour period (100-year storm event) and to comply with applicable local codes and standards. If the water stored onsite were used for fighting a fire, this water would be contained by the Project's stormwater control system and would not expose people or structures to risks as a result of runoff. The Project is not expected to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, and impacts would be less than significant.

5.16.3 Cumulative Effects

Cumulative projects that would have the potential to be considered in a cumulative context with the proposed Project's incremental contribution and that are included in the analysis of cumulative impacts relative to wildfire are shown in Figure 2-6 and discussed in Section 2.5 of the Project Description. Cumulative projects were identified within 6 miles of the Project site and include residential, commercial, and industrial development as well as energy projects similar to the proposed Project. Some of these projects are located in SRAs or High FHSZs.

The Project site is in a High FHSZ (Figure 5.16-2). As discussed in Section 5.16.2, the proposed Project would not substantially impair an adopted emergency response plan or emergency evacuation plan; would not exacerbate wildfire risks and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; would not require the installation or maintenance of associated infrastructure that could exacerbate fire risk; and would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, because of runoff, post-fire slope instability, or drainage changes. Standard fire prevention practices and equipment would be used during Project construction. The Project would be designed in accordance with applicable local, state, and federal fire codes and regulations and would include installation and maintenance of associated infrastructure to reduce fire risk. This infrastructure includes access roads adequate to provide emergency ingress and egress; removal of vegetation within the facility fenceline; and fire-fighting equipment such as water pumps, water tanks, and fire extinguishers.

The proposed Project, combined with other projects in the area, could increase the population and/or activities and potential ignition sources in the Project area, which may increase the potential of a wildfire or increase the number of people and structures exposed to risks associated with wildfires. As with the proposed Project, the cumulative projects would be designed and constructed in compliance with applicable local, state, and federal codes and regulations regarding fire safety and prevention, including onsite fire prevention and firefighting equipment and practices, as well as codes and regulations on site stability and stormwater management. The cumulative projects would be expected to implement design, equipment, and practices sufficient to reduce any wildfire impacts to a less than significant level. Therefore, cumulative effects of the proposed Project and other related projects would not be significant, and no cumulative impacts would occur.

5.16.4 Mitigation Measures

Impacts associated with wildfire would be less than significant, and no mitigation measures are proposed.

5.16.5 Laws, Ordinances, Regulations, and Standards

Federal, state, and local LORS applicable to wildfire are discussed below and summarized in Table 5.16-2.

Table 5.16-2. LORS Applicable to Wildfire

LORS	Applicability	Opt-In Application Reference	Project Conformity
Federal			
NFPA Codes, Standards, Practices, and Guides	Provides standards for the design, installation, and operation of BESS regarding fire safety	Section 5.16.5.1.1	The NFPA standards required by the Project, including NFPA 855 Standard for the Installation of Stationary Energy Storage Systems, are the standards for the testing, design, installation, and operation of BESS and associated components and provide the basis for state regulations (Section 1207 of the CFC) that the Project would comply with.
North American Electric Reliability Corporation; Institute of Electrical and Electronics Engineers; and National Electrical Safety Code	Electrical components (e.g., overhead powerlines) of the proposed Project	Section 5.16.5.1.2, Section 5.16.5.1.3, and Section 5.16.5.1.4	All electrical components associated with the Project would comply with the requirements of these LORS.
International Fire Code and International Wildland–Urban Interface Code	Model codes for California	Section 5.16.5.1.6 and Section 5.16.5.1.7	As a model code for the CFC and upcoming Wildland-Urban Interface Code, the code impacts what requirements are adopted by the State and County.
State			
Sections 51175 through 51189 of the CGC, Title 14 of the CGC, Sections 4290 through 4293 of the PRC; Section 8386 of the PUC, and General Orders and Rules of the CPUC	LORS pertaining to defensible space, vegetation management around powerlines, and fire hazard severity zones	Section 5.16.5.2.1, Section 5.16.5.2.2, Section 5.16.5.2.5, Section 5.16.5.2.7, and Section 5.16.5.2.6	Vegetation management around power lines would comply with these requirements.
Part 2 of Title 24 in the CCR and CBC	Standards for construction of the proposed Project	Section 5.16.5.2.3	Project construction would comply with the CBC through compliance with the Alameda County Code of Ordinances.
Part 9 of Title 24 in the CCR and CFC	Establishes requirements for fire department access, fire protection systems, and BESS design, installation, and operation	Section 5.16.5.2.3 and Section 5.16.5.2.4	All associated components would comply with the requirements of the CFC, including those pertaining to fire apparatus access and Project design.

LORS	Applicability	Opt-In Application Reference	Project Conformity
CAL FIRE	Would provide fire suppression service to the proposed Project given its location within an SRA. Additionally, the FRAP database includes map data documenting areas of significant fire hazards in California relative to the proposed Project	Section 5.16.5.2.8	The Project would be served by CAL FIRE suppression services via Station 26 – Castle Rock and would comply with all pertinent LORS for development with an SRA.
2024 Strategic Fire Plan	Dictates the fire protection policies of CAL FIRE.	Section 5.16.5.2.10	Defines the policies of an agency providing fire protection services to the Project.
State and Local			
Mutual Aid Agreements	Establishes agreements between fire protection agencies to provide aid to nearby areas, when necessary	Section 5.16.5.2.11	Enables fire protection to be provided by the nearest resource and for additional resources to respond when necessary.
Local			
Alameda County Emergency Operations Plan	Provides an overview of the county's approach to emergency operations and assigns roles and responsibilities	Section 5.16.5.3.1	Identifies emergency procedures for unincorporated Alameda County that would apply to the Project.
Alameda County Local Hazard Mitigation Plan	Includes goals and objectives intended to reduce loss of life and property from natural disasters	Section 5.16.5.3.2	Project would be consistent with applicable wildfire mitigation actions
Alameda County General Plan	Establishes policies and actions that guide fire- safe development and local emergency services	Section 5.16.5.3.3	Provides general principles that the Project would follow, as well as policies that would affect the emergency services that would serve the Project.
Alameda County Code of Ordinances	Contains the ACFC, which outlines the requirements of the Project pertaining to fire safety	Section 5.16.5.3.4	Contains pertinent codes (fire, building, and electrical) that all associated components would comply with.

CBC = California Building Code

CCR = California Code of Regulations

CGC = California Government Code

PUC = Public Utilities Code

5.16.5.1 Federal LORS

5.16.5.1.1 National Fire Protection Association Codes, Standards, Practices, and Guides

NFPA codes, standards, recommended practices, and guides are developed through a consensus standards development process approved by the American National Standards Institute. NFPA standards are recommended guidelines and nationally accepted good practices in fire protection but are not laws or codes unless adopted as such or referenced as such by the CFC or the local fire agency.

- NFPA 10 Standard for Portable Fire Extinguishers: Specifies the types, sizes, rating, and locations for portable fire extinguishers. It also provides information on how to calculate the number and size of portable fire extinguishers needed.
- NFPA 11 Standard for Low-, Medium-, and High-Expansion Foam: Provides recommendations for design and installation of firefighting foam systems and portable equipment and recommendations regarding calculating the amount of foam concentrate and solution needed on a flammable or combustible liquid fire.
- NFPA 13 Standard for Installation of Sprinkler Systems: Standard for design and installation of automatic fire sprinkler systems in a building. It provides the requirements for the type of system needed in a particular occupancy, water supply, sprinkler head flow and pressures, locations of sprinkler heads, and installation of the system. This standard is referenced by the CFC.
- NFPA 22 Standard for Water Tanks for Private Fire Protection: Provides recommendations for the design, construction, installation, and maintenance of tanks and accessory equipment that supply water for private fire protection.
- NFPA 30 Flammable and Combustible Liquids Code: Provides safeguards to reduce the hazards associated with the storage, use, and handling of flammable and combustible liquids and information regarding tank storage, spacing, dispensing of liquids, portable containers, and other related operations. NFPA 30 is referenced by the CFC.
- NFPA 70 National Electrical Code: Standard for the design, installation, and inspection of electrical hazards. It includes recommendations for several types of occupancies and provides recommendations and criteria for the location and installation of "explosion proof" electrical systems.
- NFPA 72 National Fire Alarm and Signaling Code: Standard for the design, installation, and operation of fire alarm systems in various occupancies. Used by fire alarm system designers when designing and installing a system and fire agencies when reviewing plans for new systems.
- NFPA 497 Classification of Flammable Liquids, Gases, or Vapors and Hazardous Locations for Electrical Installations in Chemical Process Areas: Standard, which is utilized along with NFPA 70, to determine flammable gas, flammable liquid, and combustible liquid hazards and to recommend the areas that require explosion-proof electrical systems. It also sets forth the extent of the classified areas. Although the title says chemical process areas, this standard is used for explosion-proof electrical, as it defines various risks and contains numerous diagrams to help the electrical system designer.
- NFPA 855 Standard for the Installation of Stationary Energy Storage Systems: Standard for the testing, design, installation, operation, and removal of BESS and associated components. It is the basis for much of Section 1207 of the CFC.

5.16.5.1.2 North American Electric Reliability Corporation

North American Electric Reliability Corporation (NERC) FAC-003 Transmission Vegetation Management Program standards are applicable to all transmission lines operated at 200 kilovolts and higher and to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the region's electric system (NERC 2022). The elements and requirements of these standards apply to transmission line–related vegetation management activities in the Project area.

5.16.5.1.3 Institute of Electrical and Electronics Engineers

In accordance with Standard 516-2003 Guide for Maintenance Methods on Energized Power Lines, the transmission vegetation management program requires identifying and documenting clearances between vegetation and any overhead supply conductors while considering transmission line voltage, effects of ambient temperature on conductor sag under maximum design loading, fire risk, line terrain, and elevation, and effects of wind velocities on conductor sway. The clearances identified must be no less than those outlined in this standard.

5.16.5.1.4 National Electrical Safety Code

Section 23 of the National Electrical Safety Code describes all clearances, including climbing space involving overhead supply and communication lines.

5.16.5.1.5 National Fire Plan

The National Fire Plan (Managing the Impacts of Wildfire on Communities and the Environment: A Report to the President in Response to the Wildfires of 2000) focuses on reducing fire impacts on rural communities and providing assurance for sufficient firefighting capacity in the future and addresses five key points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability. The National Fire Plan continues to provide invaluable technical, financial, and resource guidance and support for wildland fire management across the United States. The U.S. Forest Service and the Department of the Interior are working to implement the key points outlined in the plan (DOI/USDA 2000).

5.16.5.1.6 International Fire Code

The International Fire Code (IFC) addresses a wide array of conditions hazardous to life and property, including fire, explosions, and hazardous materials handling or usage. The IFC places an emphasis on prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every 3 years, the IFC uses a hazards classification system to determine the appropriate measures to be incorporated to protect life and property and these measures often include construction standards and specialized equipment. The IFC uses a permit system based on hazard classification to ensure that required measures are instituted (International Code Council 2020a).

5.16.5.1.7 International Wildland–Urban Interface Code

The International Wildland–Urban Interface Code is a model code addressing wildfire issues in low-density rural residential areas or where residential areas abut open space (International Code Council 2020b). As of the time of this Opt-In Application being written, California is in the process of consolidating all State codes applicable to the wildland-urban interface into its own Wildland-Urban Interface Code.

5.16.5.2 State LORS

5.16.5.2.1 California Government Code

Sections 51175 through 51189 of the California Government Code (CGC) provide guidance for classifying lands as fire hazard areas and requirements for management of property within those lands. CAL FIRE is responsible for classifying FHSZs based on statewide criteria and makes the information available for public review. Further, as AHJ, local agencies must designate by ordinance Very High FHSZs based on the recommendations of CAL FIRE. Section 51182 of the CGC sets forth requirements for maintaining property within fire hazard areas, such as defensible space, vegetative fuels management, building materials and standards. Defensible space consists of 100 feet of fuel modification on each side of a habitable structure, but not beyond the property line unless findings conclude that the clearing is necessary to significantly reduce the risk of structure ignition in the event of a wildfire.

5.16.5.2.2 California Code of Regulations Title 14 Natural Resources

Title 14 also sets forth requirements for defensible space if the distances specified in Sections 51175 through 51189 of the CGC cannot be met. For example, options that have similar practical effects include noncombustible block walls or fences, 5 feet of clearance of noncombustible material around the structure, installing hardscape landscaping or reducing exposed windows on the side of the structure with a less-than-30-foot setback, or additional structure hardening such as those required in the California Building Code (CBC). Sections 1254 through 256 of the California Code of Regulations (CCR) establish requirements for vegetation clearance around electric poles and conductors in SRAs.

5.16.5.2.3 Title 24 California Building Code

Title 24 contains the CBC. Chapter 7A of the CBC regulates building materials, systems, and/or assemblies used in the exterior design and construction of new buildings located within a wildland– urban interface fire area. The purpose of Chapter 7A of the CBC is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any FHSZ within an SRA or a wildland–urban interface fire area to resist the intrusion of flames or embers projected by a vegetation fire and to contribute to a systematic reduction in conflagration losses. New buildings located in such areas must comply with the ignition-resistant construction standards outlined in Chapter 7A of the CBC.

5.16.5.2.4 California Fire Code

Title 24 contains the CFC, which incorporates by adoption the IFC with necessary California amendments. The purpose of the CFC is to establish the minimum requirements to safeguard the public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises and to provide safety and assistance to firefighters and emergency responders during emergency operations. Chapter 49 of the CFC contains minimum standards for development in the wildland–urban interface and fire hazard areas. Section 1207 of the CFC establishes requirements for electrical energy storage systems, including allowable quantities and separation distances based upon the type of installation.

5.16.5.2.5 California Public Resources Code

Section 4290 of the PRC requires minimum fire safety standards related to defensible space that are applicable to residential, commercial, and industrial building construction in SRAs and lands classified and designated as Very High FHSZs. These regulations include road standards for fire apparatus access, standards for signs identifying roads and buildings, fuel breaks and green belts, and minimum water supply requirements. These regulations do not supersede local regulations that equal or exceed minimum regulations required by the state.

Section 4291 of the PRC requires a reduction of fire hazards around buildings located adjacent to mountainous areas, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered in flammable material. It requires maintaining a minimum 100 feet of clearance of vegetation management around all buildings and is the primary mechanism for conducting fire prevention activities on private property where CAL FIRE is the AHJ. Further, Section 4291 of the PRC requires the removal of dead or dying vegetative materials from the roof of a structure and trees and shrubs must be trimmed from within 10 feet of the outlet of a chimney or stovepipe. Exemptions may apply for buildings with an exterior constructed entirely of nonflammable materials.

Sections 4292 and 4293 of the PRC describe the responsibilities of operators of electrical equipment, including distribution and transmission systems, to maintain the flammable vegetation around their equipment and the overhead wires to the following standards:

- Clear a fire break of no less than 10 feet in each direction from the outer circumference of a pole or tower that supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole.
- Maintain a clearance of the following respective distances in all directions between all vegetation and all conductors that are carrying electric current:
  - For any line that is operating at 2,400 or more volts but less than 72,000 volts, 4 feet.
  - For any line operating at 72,000 or more volts but less than 110,000 volts, 6 feet.
  - For any line operating at 110,000 or more volts, 10 feet.

5.16.5.2.6 California Public Utilities Commission General Orders and Rules

- CPUC General Order (GO) No. 131-D -The CPUC is the sole and exclusive AHJ over the siting and design of the proposed Project. Section XIV.B in GO No. 131-D clarifies that local AHJ are preempted from regulating facilities constructed by public utilities subject to the CPUC's jurisdiction, requires public utilities to consult with local agencies regarding land use matters, and in instances where differences are unable to be resolved, requires a hearing be set no later than 30 days after the utility or local agency has notified the PUC of the inability to reach agreement on land use matters.
- CPUC GO No. 95 describes the overhead line design, construction, and maintenance requirements. GO 95 applies to all overhead electrical supply and communication facilities outside buildings.
- CPUC GO No. 166 describes the standards to ensure that electric utilities which are the AHJ are prepared for emergencies and disasters to minimize damage and inconvenience to the public which may occur due to electric system failures, major outages, or hazards posed by damage to electric facilities. GO 166 applies to all electric utilities subject to the CPUC as the AHJ concerning matters relating to electric service reliability and safety.
- Rule R.08-11-005 describes identifying, evaluating, and adopting fire-safety regulations for the HFTD. R.08-11-005 also adopted the CPUC Fire-Threat Map, which describes the High Fire Threat District that consists of three areas: Tier 1 High Hazard Zones, Tier 2 Elevation Risk, and Tier 3 Extreme Risk areas.

5.16.5.2.7 Public Utilities Code 8386

Section 8386 of the Public Utilities Code (PUC) describes the basic requirements for investor-owned utilities (IOU) toward operating their equipment to minimize the risk of catastrophic wildfire posed by their electrical lines and equipment. Section 8386 also describes the required elements of a Wildfire Mitigation Plan prepared by an IOU, including the wildfire risks, risk drivers present in their service territory, and the strategies the IOU is performing to mitigate these risk/risk drivers.

5.16.5.2.8 California Department of Forestry and Fire Protection

CAL FIRE is tasked with reducing wildfire-related impacts and enhancing California's resources. CAL FIRE responds to all types of emergencies, including wildland fires and residential/commercial structure fires. CAL FIRE is responsible for the protection of approximately 31 million acres of private land within the state and is responsible for inspecting defensible space around private residences at the local level. CAL FIRE is responsible for enforcing State of California fire safety codes included in the CCR and PRC. Section 4291 of the PRC states generally that any person operating any structure located on brush-covered lands or land covered with flammable material is required to maintain defensible space around the structure. Section 1254 of the CCR identifies minimum clearance requirements required around utility poles. In SRAs where CAL FIRE is the AHJ, the Fire Safety Inspection Program is a valuable tool for community outreach and enforcement of state fire codes.

CAL FIRE also inspects utility facilities and makes recommendations regarding improvements in facility design and infrastructure. Joint inspections of facilities by CAL FIRE and the utility owner are recommended by CAL FIRE so that each entity may assess the current state of the facility and successfully implement fire prevention techniques and policies. Violations of state fire codes discovered during inspections are required to be brought into compliance with the established codes. If a CAL FIRE investigation reveals that a wildfire occurred because of a violation of a law or negligence, the responsible party could face criminal and/or misdemeanor charges. In cases where a violation of a law or negligence has occurred, CAL FIRE has established the Civil Cost Recovery Program that requires parties liable for wildfires to pay for wildfire-related damages.

5.16.5.2.9 Fire Hazard Severity Zone Mapping

The FRAP database provides data documenting areas of significant fire hazards throughout the state based on fuel loading, slope, fire history, weather, and other relevant factors as directed by Sections 4201 through4204 of the PRC and Sections 51175 through 51189 of the CGC. FHSZs are ranked from Moderate to Very High and are categorized for fire protection within a FRA, SRA, or LRA where a federal agency, CAL FIRE, or local agency, respectively, is the AHJ. The Project site and surrounding area is located within a High FHSZ (Figure 5.16-2).

5.16.5.2.10 California Strategic Fire Plan

The 2024 Strategic Plan (CAL FIRE 2024d) is guided by CAL FIRE's mission to serve and safeguard the people and protect the property and resources of California, as well as its vision to be the leader in providing fire prevention and protection, emergency response, and enhancement of natural resource systems. The 2019 Strategic Plan is organized into four goals. These goals include improving core capabilities, enhancing internal operations, ensuring health and safety, and building an engaged, motivated, and innovative workforce. These goals are further categorized into the following objectives to meet said goals.

- Analyze and integrate core operations functions at all levels of CAL FIRE.
- Evaluate and improve existing emergency response capabilities.
- Expand forestry and fire prevention through effective natural resource management programs, education, inspections, and land use planning.
- Strengthen post-incident assessments to create long-term improvements.
- Analyze business support functions and improve operational efficiencies.
- Define and effectively manage internal communication processes.
- Review and update communication processes to all external stakeholders.
- Create a secure, responsive, and integrated user-centric technology culture.
- Manage fiscal challenges to ensure adequate funding for critical programs.
- Promote employee behavioral health and physical fitness.
- Promote the safety of CAL FIRE employees, partners, and the public.
- Address skill gaps and barriers through creative outreach and recruiting.
- Create and implement detailed training plans for all CAL FIRE employees.
- Retain the CAL FIRE workforce through purposeful engagement.

5.16.5.2.11 Mutual Aid Agreements

The California Disaster and Civil Defense Master Mutual Aid Agreement provides statewide mutual aid between and among the state and local jurisdictions. The system exists to ensure that adequate resources, facilities, and other supports are provided to AHJ whenever resources prove to be inadequate for a given situation. Each AHJ controls its own personnel and facilities but can give and receive help whenever needed. CAL FIRE and the ACFD participate in these mutual aid, automatic aid, and other agreements with surrounding fire departments. In some instances, the closest available resource may come from another fire department.

5.16.5.3 Local LORS

The proposed Project would be subject to state and federal agency planning documents described earlier, as well as the regional or local planning documents such as the ACGP and the Alameda County Code of Ordinances.

5.16.5.3.1 Alameda County Emergency Operations Plan

The EOP provides an overview of Alameda County's approach to emergency operations, identifies emergency response policies, describes the response and recovery organization, and assigns specific roles and responsibilities to Alameda County departments, agencies, and community partners. The EOP has the flexibility to be used for all emergencies and facilitates response and recovery activities in an efficient and effective way (Alameda County 2012).

5.16.5.3.2 Alameda County Local Hazard Mitigation Plan

The LHMP contains goals and objectives that are intended to reduce loss of life and property from natural disasters. During the planning process, the LHMP used Federal Emergency Management Agency (FEMA) tools to determine the threats would be earthquakes, flooding, landslides, tsunamis, and wildfires in urban interface zones. The LHMP identifies mitigation actions to meet objectives and reduce the impacts of hazards. The LHMP is written on behalf of three separate entities: Alameda County, ACFD, and Alameda County Flood Control and Water Conservation District (Alameda County 2021).

5.16.5.3.3 Alameda County General Plan Safety Element

The ACGP Safety Element (ACCDA 2022) addresses safety issues arising from both naturally occurring and human-caused conditions and presents goals and policies focused on reducing the potential risk of death, injuries, property damage, and economic and social dislocation resulting from hazards. Fire hazards are included as a public safety and service issue. The following goals and policies related to fire hazards may be applicable to the proposed Project.

Goal 2: To reduce the risk of urban and wildland fire hazards.

Policy P2: Hill area development, and particularly that adjoining heavily vegetated open space area, should incorporate careful site design, use of fire retardant building materials and landscaping, development and maintenance of fuel breaks and vegetation management programs, and provisions to limit public access to open space areas in order to minimize wildland fire hazards.

Policy P4: All urban and rural development, existing and proposed, should be provided with adequate water supply and fire protection facilities and services. Facilities serving hill area development should be adequate to provide both structural and wildland fire protection. The primary responsibility falls upon the owner and the developer.

Policy P5: Structures, features of structures, or uses that present an unacceptable risk of fire should be brought into conformance with applicable fire safety standards.

Policy P6: Plan new public and private buildings to minimize the risk of fires and identify measures to reduce fire hazards to persons and property in all existing development.

Policy P7: Alameda County shall adhere to the provisions of the Alameda County Fire Protection Master Plan and Fire Hazard Mitigation Plan.

Policy P8: Alameda County shall limit residential development to very low densities in high fire hazard zones.

Policy P10: Alameda County shall require the design of adequate infrastructure if a new development is located in a SRA or in a Very High FHSZ, including safe access for emergency response vehicles, visible street signs, and water supplies for structural fire suppression.

Policy P11: Alameda County shall require the use of fire-resistant building materials, fire resistant landscaping, and adequate clearance around structures in High and Very High fire hazard areas.

Policy P13: Alameda County shall work cooperatively with public agencies with responsibility for fire protection and refer development applications to the ACFD or the local Fire District for review and recommendation.

Policy P17: Alameda County shall avoid or minimize the wildfire hazards associated with new uses of land.

Action A1: Limit or prohibit development and activities in areas lacking adequate water and firefighting facilities.

Action A2: Enforce design standards and guidelines through the site development, planned development, and subdivision review process.

Action A3: Require environmental impact assessment for development proposals in areas of severe fire hazard by establishing a regular review schedule for areas subject to this requirement.

Action A14: Revise Alameda County's Integrated Vegetation Management Program to require private property owners to maintain the vegetation on their property in a condition that will not contribute to the spread of a fire. Requirements for private property owners could include, but need not be limited to, the following:

- Maintain a 30-foot defensible space around all buildings and structures.
- Remove all portions of trees within 10 feet of chimneys and stovepipe outlets.
- Remove materials or plants that may function as a fuel or a conveyance of fire such as dead/dying wood on trees adjacent to/overhanging structures, leaves, pine needles, etc. on rooftops or elsewhere on the property; and
- Install spark arresters in chimney and or stovepipe outlets.

5.16.5.3.4 Alameda County Code of Ordinances

The ACFC adopts the 2022 CFC (Title 24 of the CCR) with amendments, including all current and future updates, based on the IFC. Alameda County also added Appendixes B, C, and D of the 2022 CFC to the ACFC. Additionally, Chapter 6.44 of the Alameda County Code of Ordinances establishes the power of Alameda County to enforce weed abatement to reduce the accumulation of grass, weeds, and other vegetation that may cause fire hazards.

5.16.6 Agency and Agency Contacts

Applicable agency and agency contacts for wildfire are shown in Table 5.16-3.

Table 5.16-3. Agency Contacts

Issue	Agency	Address	Contact
Emergency Response	Alameda County Office of Emergency Services (part of Sheriff's Office)	4985 Broder Blvd Dublin, California 94568	County Sheriff-Coroner Yesenia Sanchez 925.803.7800 (main office) 510.272.6878 (Sheriff)
Fire Hazards	CAL FIRE Station 26 – Castle Rock	16502 W Schulte Rd, Tracy, California 95377	Station Chief 209.835.8853

Issue	Agency	Address	Contact
Fire Hazards	SSJCFA Station 94	16502 W Schulte Rd, Tracy, California 95377	Fire Chief Randall Bradley 209.831.6700

5.16.7 Permits and Permit Schedule

No permits associated with wildfire are anticipated for the Project. The Project design will be submitted to the CEC Chief Building Officer (CBO) for review and comment on fire safety features of the Project. The standards include fire and safety equipment requirements to be approved by the fire code official with jurisdiction over the Project, which is the CBO. Additionally, UL 9540A testing documentation will be provided to the CBO once BESS technology has been finalized.

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5.17 Worker Health and Safety

This section summarizes the worker health and safety issues that may be encountered during the construction and operation of the proposed Viracocha Hill BESS Project (Viracocha Hill BESS or Project). It contains worker safety information, including applicable laws, ordinances, regulations, and standards (LORS). Section 5.17.1 is a brief description of the work environment and setting. Section 5.17.2 describes the health and safety programs in terms of analyses conducted to identify hazards and the safety compliance and training programs that will be established onsite. Section 5.17.3 discusses the applicable LORS. Section 5.17.4 lists the regulatory agencies involved and key agency contacts. Section 5.16.5 presents permits required and the permitting schedules.

5.17.1 Setting

The proposed Project is located within the Altamont Pass, approximately 0.8-mile southwest of the Bethany Reservoir in the unincorporated area of Alameda County, California. The Project will provide approximately 362.8 Megawatt hours (MWh) of energy capacity. The Project will be located on a 443-acre parcel (APN 99B-7300-1-5) and will consist of a 17-acre area that will include an approximately 14-acre BESS yard, laydown area, substation, and retention pond. The exact design and location of these features will be refined as the Project moves forward. Additionally, the Project includes improvements to a 0.3-mile-long access road, a 0.15-acre road improvement, and an approximately 1,325-foot-long gen-tie line connecting to the Ralph Substation. If expanding the Ralph Substation is unavailable, a new switching station or a line-tap will be developed adjacent to the existing substation.

The Project is accessible via an approximately 2.1-mile-long existing unpaved access road (Wind Farm Road) from Altamont Pass Road. The city of Tracy is approximately 3 miles east, and the city of Livermore is approximately 6 miles southwest of the Project site. The surrounding area consists of operating wind power generation facilities located throughout the area, the Altamont Landfill to the west, and the Bethany Reservoir to the north.

5.17.2 Health and Safety Programs

5.17.2.1 Environmental Checklist

Impacts generally would be evaluated with respect to the California Environmental Quality Act (CEQA) checklist. However, the CEQA checklist does not have specific questions for worker health and safety. Related questions are addressed in the Hazardous Materials (HAZMAT) Management and Noise sections.

5.17.2.2 Hazard Analysis

Workers will be exposed to construction and plant operation safety hazards. A hazard analysis follows to evaluate these hazards and assess control measures. The analysis identifies the hazards anticipated during construction and operation and indicates which safety programs should be developed and implemented to mitigate and appropriately manage these hazards. The hazard analysis for construction activities is presented in Table 5.17-1; the hazard analysis prepared for plant operation is presented in Table 5.17-2. Because the types of hazards anticipated during construction and operation are similar, there is duplication between the tables.

Programs are overall plans that set forth the method or methods that will be followed to achieve health and safety objectives. For example, the Fire Protection and Prevention Program will describe what must be done to protect against and prevent fires. This will include equipment required, such as alarm systems and firefighting equipment, and procedures to follow to protect against fires. The Emergency Action Program and Plan will describe escape procedures, rescue and medical procedures, alarm and communication systems, and response procedures for every hazardous material that can migrate, such as hydrogen sulfide

(H_2S). The programs or plans are set forth in written documents that are usually kept at specific locations within the facility.

Each program or plan will contain training requirements that are translated into detailed training courses. These courses are taught to plant construction and operating personnel, as needed. For example, all plant operating personnel will receive training in escape procedures under the Emergency Action Program and Plan, but only those operating forklifts will receive forklift operator training.

Tables 5.17-1 and 5.17-2, which list construction and operation activities and associated hazards, also identify (in the "Control" column) the program designed to reduce the occurrence of each hazard. In addition, hazards specific to geothermal fluid during well drilling and facility operations are addressed in Sections 5.17.2.2.1 and 5.17.2.2.2, respectively.

Table 5.17-1. Construction Hazard Analysis for Viracocha Hill BESS

Activity	Hazard*	Control
Motor vehicle and heavy equipment use	Employee injury and property damage from collisions between people and equipment	Motor Vehicle and Heavy Equipment Safety Program
Forklift operation	Employee injury and property damage from collisions between people and equipment	Forklift Operation Program
Trenching and excavation	Employee injury and property damage from the collapse of trenches and excavations or exposure to fumes or vapors that have collected in the trench/excavation	Excavation/Trenching Program
Working at elevated locations	Falls from the same level and elevated areas	Fall Prevention Program; Scaffolding/Ladder Safety Program; Articulating Boom Platforms Program
Use of cranes and derricks	Property damage from falling loads; employee injuries from falling loads; and injuries and property damage from contact with crane or derrick	Crane and Material Handling Program; Crane Operator Certification
Working with flammable and combustible fluids	Fire/spills	Fire Protection and Prevention Program; Housekeeping and Material Handling and Storage Program
Hot work (including cutting and welding)	Employee injury and property damage from fire; exposure to fumes during cutting and welding; ocular exposure to ultraviolet and infrared radiation during cutting and welding	Hot Work Safety Program; Respiratory Protection Program; Employee Exposure Monitoring Program; Personal Protective Equipment (PPE) Program
High Ambient Heat Index	Employee exposure to extreme heat stress results in heat stroke, heat exhaustion, heat cramps or heat rashes	High Heat Index work program; Cooling stations; Indoor Potable water stations; Reinforce safety program during high heat index work environment

Activity	Hazard*	Control
Inspection and maintenance of temporary systems used during construction activities	Employee injury and property damage from contact with hazardous energy sources	Electrical Safety Program
Working on electrical equipment and systems	Employee contact with live electricity and energized equipment	Electrical Safety Program; PPE Program, Hazardous Energy Control (Lockout/Tagout)
Exposure to hazardous waste	Employee exposure to contaminated soil, groundwater, or construction-generated hazardous wastes or debris during construction	Hazardous Waste Program
Exposure to hazardous gases, vapors, dust, and fumes	Injury from employee exposure or overexposure to hazardous gases, vapors, dusts, and fumes.	Hazardous Substances Program; Respiratory Protection Program; PPE Program; Employee Exposure Monitoring Program
Confined-space entry	Employee injury from physical and chemical hazards	Permit-required Confined-Space Entry Program
General construction activity	Employee injury from hand and portable power tools	Hand and Portable Power Tool Safety Program; PPE Program
	Employee injury/property damage from inadequate walking and work surfaces	Housekeeping and Material Handling and Storage Program
	Employee exposure to occupational noise	Hearing Conservation Program; PPE Program
	Employee injury from improper lifting and carrying of materials and equipment	Back Injury Prevention Program
	Employee injury to head, eye/face, hand, body, foot, and skin	PPE Program
	Employee exposure to hazardous gases, vapors, dusts, and fumes	Hazard Communication Program; Respiratory Protection Program; PPE Program; Air Monitoring Program
	Employee exposure to various hazards; reporting of hazardous conditions during construction	Injury and Illness Prevention Program
	Heat and cold stress	Heat and Cold Stress Monitoring and Control Program

* The hazards and hazard controls provided are generic to construction activities. During various phases of construction, a hazard analysis will be performed to evaluate the relevant hazards more specifically and to develop appropriate hazard controls.

Table 5.17-2. Operation Hazard Analysis for Viracocha Hill BESS

Activity	Hazard*	Control
Motor vehicle equipment use	Employee injury and property damage from collisions between people and equipment	Motor Vehicle Equipment Safety Program
Trenching and excavation	Employee injury and property damage from the collapse of trenches and excavations	Excavation/Trenching Program
Working at elevated locations	Falls from the same level and elevated areas	Fall Protection Program; Scaffolding/Ladder Safety Program
Working with flammable and combustible fluids	Fire/spills	Fire Protection and Prevention Program
Working with HAZMAT	Employee injury from ingestion, inhalation, dermal contact with HAZMAT	Hazard Communication Program
Troubleshooting and maintenance of plant systems and general operational activities	Employee injury and property damage from contact with hazardous energy sources	Electrical Safety Program
Working on electrical equipment and systems	Employee contact with live electricity	Electrical Safety Program; PPE Program, Program, Hazardous Energy Control (Lockout/Tagout)
General plant operation activities	Employee injuries from hand and portable power tools	Hand and Portable Power Tool Safety Program; PPE Program
	Employee injury and property damage from inadequate walking and work surfaces	Housekeeping and Material Handling and Storage Program
	Employee overexposure to occupational noise	Hearing Conservation Program; PPE Program
	Employee injury from improper lifting and carrying of materials and equipment	Back Injury Prevention Program
	Employee injury and property damage from unsafe driving	Safe Driving Program
	Employee overexposure to hazardous gases, vapors, dusts, and fumes	Hazard Communication Program; Respiratory Protection Program; PPE Program; Employee Exposure Monitoring Program
	Reporting and repair of hazardous conditions	Injury and Illness Prevention Program

Activity	Hazard*	Control
	Heat and cold stress	Heat and Cold Stress Monitoring and Control Program
	Ergonomic injuries	Ergonomic Awareness Program

* The hazard and hazard controls provided are generic to operational activities. This hazard analysis may have to be updated if plant operations change or new equipment is added that was not considered during this evaluation

5.17.2.3 Training and Safety Programs

To protect the safety and health of workers during the construction and operation of the Project, health and safety programs designed to mitigate hazards and comply with applicable regulations will be implemented. Qualified individuals will perform periodic audits to determine whether proper work practices are being used to mitigate hazardous conditions and to evaluate regulatory compliance.

5.17.2.3.1 Construction Health and Safety Program

The following construction safety programs will be developed and implemented during construction of the Project.

Injury and Illness Prevention Program

- Philosophy and safety commitment
- Safety leadership and responsibilities
- Accountability
- Specific core safety processes (refer to Construction Safety Programs later in this section)
- Employee communication
- Planning job hazard analysis and pretask
- Compliance with work rules and safe work practices
- Measurement of compliance and effectiveness of prevention methods, inspections/audits
- Communication of performance and implementation of necessary improvements
- Training and other communication requirements

Fire Protection and Prevention Program

- General requirements
- Housekeeping and proper material storage
- Employee alarm/communication system
- Portable fire extinguishers
- Fixed firefighting equipment
- Fire control and containment
- Flammable and combustible fluid storage
- Dispensing and disposal of flammable fluids
- Service and refueling areas
- Training

PPE Program

- Personal protective devices
- Head protection
- Eye/face protection
- Body protection
- Hand protection
- Foot protection
- Skin protection
- Fall protection

- High-voltage protection
- Respiratory protection
- Hearing protection
- Hazard analysis
- Training

Emergency Action Program and Plan

- Emergency procedures for the protection of personnel, equipment, the environment, and materials:
  - Fire and emergency reporting procedures
  - Response actions for accidents involving personnel and property
  - Bomb threat response procedures
  - Site assembly and emergency evacuation route procedures
  - Natural disaster response
- Reporting and notification procedures for emergencies and contacts, including offsite and local authorities:
  - Alarm and communication systems
  - Spill response, prevention, and control action plan
  - Emergency response equipment
  - Emergency personnel (response team) responsibilities and notification roster
  - Training requirements

Construction Safety Programs

- Motor Vehicle and Heavy Equipment Safety Program
  - Operation and maintenance of vehicles
  - Inspection
  - PPE
  - Training
- Forklift Operation Program
  - Trained and certified operators
  - Fueling operations
  - Safe operating parameters
  - Training
- Excavation/Trenching Program
  - Shoring, sloping, and benching requirements
  - California Division of Occupational Safety and Health (Cal/OSHA) permit requirements
  - Inspection
  - Air monitoring
  - Access and egress
- Fall Protection Program
  - Evaluation of fall hazards
  - Protection devices
  - Training
- Scaffolding/Ladder Safety Program
  - Construction and inspection of equipment
  - Proper use
  - Training

- Articulating Boom Platforms Program
  - Inspection of equipment
  - Load ratings
  - Safe operating parameters
  - Operator training
- Crane and Material Handling Program
  - Certified and licensed operators
  - Inspection of equipment
  - Load ratings
  - Safe operating parameters
  - Training
- Hazardous Waste Program
  - Evaluation of hazard
  - Training
  - Air monitoring
  - Medical surveillance
  - Health and Safety Plan (HSP) preparation
- Hot Work Safety Program
  - Welding and cutting procedures
  - Fire watch
  - Hot work permit
  - PPE
  - Training
- Employee Exposure Monitoring Program
  - Exposure evaluation
  - Monitoring requirements
  - Reporting of results
  - Medical surveillance
  - Training
- Electrical Safety Program
  - Grounding procedure
  - Lock-out/tag-out (LO/TO) procedures
  - Overhead and underground utilities
  - Utility clearance
  - Assured Grounding Program/Ground Fault Circuit Interrupters
  - Training
- Permit-required Confined-space Entry Program
  - Air monitoring and ventilation requirements
  - Rescue procedures
  - LO/TO and blocking, blinding, and blanking requirements
  - Permit completion
  - Training
- Hand and Portable Power Tool Safety Program
  - Guarding and proper operation
  - Training

- Housekeeping and Material Handling and Storage Program
  - Storage requirements
  - Walkways and work surfaces
  - Equipment handling requirements
  - Training
- Hearing Conservation Program
  - Identifying high-noise environments
  - Exposure monitoring
  - Medical surveillance requirements
  - Hearing-protective devices
  - Training
- Back Injury Prevention Program
  - Proper lifting and material-handling procedures
  - Training
- Hazard Communication Program
  - Labeling requirements
  - Storage and handling
  - Safety Data Sheet (SDS)
  - Chemical inventory
  - Training
- Respiratory Protection Program
  - Selection and use
  - Storage
  - Fit testing
  - Medical requirements
  - Inspection and repair
  - Training
- Heat and Cold Stress Monitoring and Control Program
  - Monitoring requirements
  - Prevention and control
- Safe Driving Program
  - Inspection and maintenance
  - Training

5.17.2.3.2 Operation Health and Safety Program

Upon completion of construction and commencement of operations at the Project, the construction HSP will transition into an operations-oriented program reflecting the hazards and controls necessary during operation. The following outline sets forth the topics that will be included in the Operations Health and Safety Program.

Injury and Illness Prevention Program

- Personnel with the responsibility and authority for implementing the plan
- Safety and health policy
- Work rules and safe work practices
- System for ensuring that employees comply with safe work practices
  - Employee communications

- Identification and evaluation of workplace hazards
- Methods and procedures for correcting unsafe or unhealthy conditions, work practices, and work procedures in a timely manner based on the severity of the hazards
- Specific safety procedures (refer to Plant Operation Safety Program)
- Training and instruction

First Aid, Cardiopulmonary Resuscitation (CPR), and Automated External Defibrillator

- General requirements
- Written program
- Training
- Maintenance

Fire Protection and Prevention Program

- General requirements
- Fire hazard inventory, including ignition sources and mitigation
- Housekeeping and proper materials storage
- Employee alarm/communication system
- Portable fire extinguishers
- Fixed firefighting equipment
- Fire control
- Flammable and combustible fluid storage
- Use of flammable and combustible fluids
- Dispensing and disposal of fluids
- Training
- Personnel to contact for information on plan contents

Emergency Action Program/Plan

- Emergency escape procedures and emergency escape route assignments
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
- Procedures to account for all employees after emergency evacuation has been completed
- Rescue and medical duties for those employees performing rescue and medical duties
- Fire and emergency reporting procedures
- Alarm and communication system
- Personnel to contact for information on plan contents
- Training requirements

PPE Program

- Hazard analysis and prescription of PPE
- Personal protective devices
- Head protection
- Eye and face protection
- Body protection
- Hand protection
- Foot protection
- Skin protection
- Sanitation
- Safety belts and lifelines for fall protection
- Protection for electric shock
- Medical services and first aid/bloodborne pathogens
- Respiratory protective equipment

- Hearing protection
- Training

Plant Operation Safety Program

- Motor Vehicle Safety Program
  - Operation and maintenance of vehicles
  - Inspection
  - PPE
  - Training
- Workplace Ergonomics Program
  - Identification of personnel at risk
  - Evaluation of personnel
  - Workplace and job activity modifications
  - Training
- Employee Exposure Monitoring Program
  - Exposure evaluation
  - Monitoring requirements
  - Reporting of results
  - Medical surveillance
  - Training
- Electrical Safety Program
  - Grounding procedure
  - LO/TO procedures
  - Overhead and underground utilities
  - Utility clearance
  - Training
- Hand and Portable Power Tool Safety Program
  - Guarding and proper operation
  - Training
- Housekeeping and Material Handling and Storage Program
  - Storage requirements
  - Walkways and work surfaces
  - Equipment handling requirements
  - Training
- Hearing Conservation Program
  - Identifying high-noise environments
  - Exposure monitoring
  - Medical surveillance requirements
  - Hearing-protective devices
  - Training
- Back Injury Prevention Program
  - Proper lifting and material-handling procedures
  - Training
- Hazard Communication Program
  - Labeling requirements
  - Storage and handling

- SDS
- Chemical inventory
- Training

- Respiratory Protection Program
  - Selection and use
  - Storage
  - Fit testing
  - Medical requirements
  - Inspection and repair
  - Training

- Heat and Cold Stress Monitoring and Control Program
  - Monitoring requirements
  - Prevention and control

5.17.2.3.3 Safety Training

To ensure that employees recognize and understand how to protect themselves from potential hazards during this Project, comprehensive training programs for construction and operation will be implemented as indicated in Tables 5.17-3 and 5.17-4. Each of the safety procedures developed to control and mitigate potential site hazards will require some form of training. Training will be delivered in various ways, depending on the requirements of Cal/OSHA standards, the complexity of the topic, the characteristics of the workforce, and the degree of risk associated with each of the identified hazards.

Table 5.17-3. Construction Training Program for Viracocha Hill BESS

Training Course	Target Employees
Injury and Illness Prevention Training	All
Emergency Action Program/Plan	All
PPE Training	All
Fire Protection and Prevention Training	All
Motor Vehicle and Heavy Equipment Safety Training	Employees working on, near, or with heavy equipment or vehicles
Forklift Operation Training	Employees operating forklifts
Excavation/Trenching Safety Training	Employees involved with trenching or excavation
Fall Protection Training	Employees working at heights greater than four feet or required to use fall protection
Scaffolding/Ladder Safety Training	Employees required to erect or use scaffolding
Crane Safety Training	Employees supervising or performing crane operations
Hazard Communication Training	Employees handling or working with HAZMAT
Hazardous Waste	Employees handling or excavating hazardous waste
Hot Work Safety Training	Employees performing hot work
Electrical Safety Training	Employees performing LO/TO or working on systems that require LO/TO activities

Training Course	Target Employees
Electrical Safety Training	Employees required to work on electrical systems and equipment, or use electrical equipment and cords
Permit-required Confined-space Entry Training	Employees required to supervise or perform confined-space entry activities
Hand and Portable Power Tool Safety Training	Employees who will be operating hand and portable power tools
Heat Stress and Cold Stress Safety Training	Employees who are exposed to temperature extremes
Hearing Conservation Training	All
Back Injury Prevention Training	All
Safe Driving Training	Employees supervising or driving motor vehicles
Respiratory Protection Training	All employees required to wear respiratory protection
Fire Protection and Prevention Training	All

Table 5.17-4. Operations Training Program for Viracocha Hill BESS

Training Course	Target Employees
Injury and Illness Prevention Training	All
Emergency Action Plan	All
PPE Training	All
Fire Protection and Prevention Training	All
Workplace Ergonomics	Employees performing repetitive activities
Electrical Safety Training	Employees performing LO/TO
Electrical Safety Training	Employees required to work on electrical systems and equipment
Hand and Portable Power Tool Safety Training	Employees that will be operating hand and portable power tools
Heat Stress and Cold Stress Safety Training	Employees exposed to temperature extremes
Hearing Conservation Training	All
Back Injury Prevention Training	All
Safe Driving Training	Employees supervising or driving motor vehicles
Hazard Communication Training	Employees handling or working around HAZMAT
Respiratory Protection Program	All employees required to wear respiratory protection
Fire Protection and Prevention Training	All
First Aid, CPR, and Automated External Defibrillator	All

5.17.2.4 Fire Protection

The Project will rely on both onsite fire protection systems and local fire protection services. The contractor will develop a Fire Protection and Prevention Plan to be followed throughout all phases of construction and provide the necessary firefighting equipment.

During construction, the permanent facility fire suppression systems will be placed in service as early as practicable. Construction fire prevention regulations in 8 CCR §§ 1920, et seq., will be followed as necessary to prevent construction fires. Special attention will be given to operations involving open flames, such as welding, and the use of flammable materials. Personnel involved in such operations will have appropriate training by the contractor. A fire watch, using the appropriate class of extinguishers or other equipment, will be maintained during hazardous or hot work operations as required. Site personnel will not be expected to fight fires past the incipient stage. As necessary, the fire protective measures will be coordinated with the local fire protection services.

Materials brought onsite must conform to contract requirements, such as flame resistance and fireproof characteristics. Specific materials in this category include fuels, paints, solvents, plastic materials, lumber, paper, boxes, and crating materials. Specific attention will be given to compressed gas, fuel, solvent, and paint storage. Electrical wiring and equipment located inside storage rooms used for Class I fluids will be stored in accordance with Electrical Safety Orders and as prescribed by 8 CCR § 5530. Outside storage areas will be designed to divert possible spills away from buildings and will be kept clear of vegetation and other combustible materials. Precautions will be taken to protect storage areas against tampering where necessary.

Elements of the onsite fire suppression system during construction will consist of portable and fixed firefighting equipment. Portable firefighting equipment will consist of fire extinguishers and small hose lines that conform to Cal/OSHA and the National Fire Protection Association (NFPA). The contractor's safety representative will conduct periodic fire prevention inspections.

Fire extinguishers will be inspected routinely and replaced immediately if defective or in need of recharge as required by 8 CCR § 6151. All firefighting equipment will be located to allow for unobstructed access to the equipment and will be conspicuously marked. A temporary or permanent water supply, of sufficient volume, duration, and pressure to operate the required firefighting equipment, will be provided as combustible materials accumulate. Designated, approved flammable materials storage areas and flammable materials storage containers will be provided with adequate fire prevention systems.

CAL FIRE would provide initial response in the event of a fire or emergency spill. Fire service could be backed up by the Alameda County Fire Department (ACFD) and the South San Joaquin County Fire Authority (SSJCFA). The ACFD has 35 stations. The responding station would be Station 20, located at 7000 East Avenue, L-388, Livermore, approximately 9 miles southeast of the Project. The SSJCFA has several stations, the nearest of which is located at 16502 W. Schulte Road, Tracy, approximately 7 miles southeast of the Project. If additional assistance is needed, the Mountain House Fire Department (located at 911 Tradition St in Mountain House,) is also in the vicinity for emergency response.

Alameda County has a HAZMAT Task Force that comprises firefighters with HAZMAT training from stations in cities and the county. The task force members have HAZMAT response training, and they are located around Alameda County to balance the distribution of HAZMAT protection resources.

Refer to Section 5.10, Socioeconomics, for additional information relating to local emergency response capabilities.

5.17.3 Laws, Ordinances, Regulations, and Standards

The Project's construction and operation will be conducted in accordance with all applicable LORS. Table 5.17-5 summarizes the federal, state, and local (Alameda County) LORS relating to worker health and safety. Table 5.17-5 also provides a summary of the applicable national consensus standards.

Table 5.17-5. Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

LORS	Requirements/Applicability	Administering Agency
Federal		
Title 29 Code of Federal Regulations (CFR) Part 1910	Contains the minimum occupational safety and health standards for general industry in the United States	OSHA
Title 29 CFR Part 1926	Contains the minimum occupational safety and health standards for the construction industry in the United States	OSHA
State		
California Occupational Safety and Health Act, 1970	Establishes minimum safety and health standards for construction and general industry operations in California	Cal/OSHA
8 CCR 339	Requires list of hazardous chemicals relating to the Hazardous Substance Information and Training Act	Cal/OSHA
8 CCR 1509	Addresses requirements for construction, accident, and prevention plans	Cal/OSHA
8 CCR 1509, et seq., and 1684, et seq.	Addresses construction hazards, including head, hand, and foot injuries and noise and electrical shock	Cal/OSHA
8 CCR 1528, et seq., and 3380, et seq.	Requirements for PPE	Cal/OSHA
8 CCR 1597, et seq., and 1590, et seq.	Requirements addressing the hazards associated with traffic accidents and earth-moving	Cal/OSHA
8 CCR 1604, et seq.	Requirements for construction hoist equipment	Cal/OSHA
8 CCR 1620, et seq., and 1723, et seq.	Addresses miscellaneous hazards	Cal/OSHA
8 CCR 1709, et seq.	Requirements for steel reinforcing, concrete pouring, and structural steel erection operations	Cal/OSHA
8 CCR 1920, et seq.	Requirements for fire protection systems	Cal/OSHA
8 CCR 2300, et seq., and 2320, et seq.	Requirements for addressing low-voltage electrical hazards	Cal/OSHA
8 CCR 2395, et seq.	Addresses electrical installation requirements	Cal/OSHA
8 CCR 2700, et seq.	Addresses high-voltage electrical hazards	Cal/OSHA
8 CCR 3200, et seq., and 5139, et seq.	Requirements for control of hazardous substances	Cal/OSHA
8 CCR 3203, et seq.	Requirements for operational accident prevention programs	Cal/OSHA

LORS	Requirements/Applicability	Administering Agency
8 CCR 3270, et seq., and 3209, et seq.	Requirements for evacuation plans and procedures	Cal/OSHA
8 CCR 3301, et seq.	Requirements for addressing miscellaneous hazards, including hot pipes, hot surfaces, compressed air systems, relief valves, enclosed areas containing flammable or HAZMAT, rotation equipment, pipelines, and vehicle-loading dock operations	Cal/OSHA
8 CCR 3360, et seq.	Addresses requirements for sanitary conditions	Cal/OSHA
8 CCR 3511, et seq., and 3555, et seq.	Requirements for addressing hazards associated with stationary engines, compressors, and portable, pneumatic, and electrically powered tools	Cal/OSHA
8 CCR 3649, et seq., and 3700, et seq.	Requirements for addressing hazards associated with field vehicles	Cal/OSHA
8 CCR 3940, et seq.	Requirements for addressing hazards associated with power transmission, compressed air, and gas equipment	Cal/OSHA
8 CCR 5109, et seq.	Requirements for addressing construction accident and prevention programs	Cal/OSHA
8 CCR 5110, et seq.	Requirements for the implementation of an ergonomics program	Cal/OSHA
8 CCR 5139, et seq.	Requirements for addressing hazards associated with welding, sandblasting, grinding, and spray-coating	Cal/OSHA
8 CCR 5150, et seq.	Requirements for confined-space entry	Cal/OSHA
8 CCR 5155, et seq.	Requirements for use of respirators and for controlling employee exposure to airborne contaminants	Cal/OSHA
8 CCR 5160, et seq.	Requirements for addressing hot, flammable, poisonous, corrosive, and irritant substances	Cal/OSHA
8 CCR 5192, et seq.	Requirements for conducting emergency response operations	Cal/OSHA
8 CCR 5193, et seq.	Requirements for controlling employee exposure to blood borne pathogens associated with exposure to raw sewage water and body fluids associated with first aid/CPR duties	Cal/OSHA
8 CCR 5194, et seq.	Requirements for employee exposure to dusts, fumes, mists, vapors, and gases	Cal/OSHA

LORS	Requirements/Applicability	Administering Agency
8 CCR 5214	Requirements for control of occupational exposure to arsenic	Cal/OSHA
8 CCR 5218	Requirements for control of occupational exposure to benzene	Cal/OSHA
8 CCR 5405, et seq.; 5426, et seq.; 5465, et seq.; 5500, et seq.; 5521, et seq.; 5545, et seq.; 5554, et seq.; 5565, et seq.; 5583, et seq.; and 5606, et seq.	Requirements for flammable fluids, gases, and vapors	Cal/OSHA
8 CCR 5583, et seq.	Requirements for design, construction, and installation of venting, diking, valving, and supports	Cal/OSHA
8 CCR 6150, et seq.; 6151, et seq.; 6165, et seq.; 6170, et seq.; and 6175, et seq.	Fire protection requirements	Cal/OSHA
Title 24, Part 3, California Electrical Code	The Cal/OSHA electrical safety regulations incorporate the requirements of the Uniform Electrical Code located in Title 24, Part 3	Cal/OSHA
8 CCR, Part 6	Provides health and safety requirements for working with tanks and boilers	Cal/OSHA
Health and Safety Code Section 25531, et seq.	Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed regulated materials prepare and maintain a Risk Management Plan	Cal/OSHA
Health and Safety Code Sections 25500 through 25541	Requires the preparation of a Hazardous Material Business Plan that details emergency response plans for a HAZMAT emergency at the facility	Cal/OSHA
Local HAZMAT		
Specific hazardous material-handling requirements	Provides response agencies with necessary information to address emergencies	Alameda County Dept. of Environmental Health
Emergency Response Plan	Allows response agency to integrate Project emergency response activities into any response actions	Alameda County Dept. of Environmental Health
Business Plan	Provides response agency with overview of Project purpose and operations	Alameda County Dept. of Environmental Health
Risk Management Plan (Certified Unified Program	Provides response agency with detailed review of risks and hazards located at Project and mitigation implemented to control risks or hazards	Alameda County Dept. of Environmental Health

LORS	Requirements/Applicability	Administering Agency
Agency, administered by the County)		
National Standards		
Uniform Fire Code, Article 80	Addresses the prevention, control, and mitigation of dangerous conditions related to storage, dispensing, use, and handling of HAZMAT and information needed by emergency response personnel	ACFD
NFPA 10, Standard for Portable Fire Extinguishers	Requirements for selection, placement, inspection, maintenance, and employee training for portable fire extinguishers	ACFD
NFPA 11, Standard for Low-Expansion Foam and Combined-Agent Systems	Requirements for installation and use of low-expansion foam and combined-agent systems	ACFD
NFPA 11A, Standard for Medium- and High-Expansion Foam Systems	Requirements for installation and use of medium- and high-expansion foam systems	ACFD
NFPA 12, Standard on Carbon Dioxide Extinguishing Systems	Requirements for installation and use of carbon dioxide extinguishing systems	ACFD
NFPA 13, Standard for Installation of Sprinkler Systems	Guidelines for selection and installation of fire sprinkler systems	ACFD
NFPA 14, Standard for the Installation of Standpipe and Hose Systems	Guidelines for selection and installation of standpipe and hose systems	ACFD
NFPA 15, Standard for Water Spray Fixed Systems	Guidelines for selection and installation of water spray fixed systems	ACFD
NFPA 17, Standard for Dry Chemical Extinguishing Systems	Guidance for selection and use of dry chemical extinguishing systems	ACFD
NFPA 20, Standard for the Installation of Centrifugal Fire Pumps	Guidance for selection and installation of centrifugal fire pumps	ACFD
NFPA 22, Standard for Water Tanks for Private Fire Protection	Requirements for water tanks for private fire protection	ACFD
NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances	Requirements for private fire service mains and their appurtenances	ACFD

LORS	Requirements/Applicability	Administering Agency
NFPA 30, Flammable and Combustible Liquid Code	Requirements for storage and use of flammable and combustible fluids	ACFD
NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines	Fire protection requirements for installation and use of combustion engines and gas turbines	ACFD
NFPA 50A, Standard for Gaseous Hydrogen Systems at Consumer Sites	Fire protection requirements for hydrogen systems	ACFD
NFPA 54, National Fuel Gas Code	Fire protection requirements for use of fuel gases	ACFD
NFPA 59A, Standard for the Storage and Handling of Liquefied Petroleum Gases	Requirements for storage and handling of liquefied petroleum gases	ACFD
NFPA 68, Guide for Explosion Venting	Guidance in design of facilities for explosion venting	ACFD
NFPA 70, National Electric Code	Guidance on safe selection and design, installation, maintenance, and construction of electrical systems	ACFD
NFPA 70B, Recommended Practice for Electrical Equipment Maintenance	Guidance on electrical equipment maintenance	ACFD
NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces	Employee safety requirements for working with electrical equipment	ACFD
NFPA 70, National Fire Alarm and Signaling Code	Requirements for installation, maintenance, and use of local protective signaling systems	ACFD
NFPA 75, Standard for the Protection of Information Technology Equipment	Requirements for fire protection systems used to protect computer systems	ACFD
NFPA 78, Guide on Electrical Inspections	Lightning protection requirements	ACFD
NFPA 80, Standard for Fire Doors and Windows	Requirements for fire doors and windows	ACFD
NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems	Requirements for installation of air conditioning and ventilating systems	ACFD

LORS	Requirements/Applicability	Administering Agency
NFPA 101, Code for Safety to Life from Fire in Buildings and Structures	Requirements for design of means of exiting the facility	ACFD
NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants	Guidelines for testing and marking of fire hydrants	ACFD
NFPA 850, Recommended Practice for Fire Protection for Fossil-Fuel Steam Electric Generating Plants	Requirements for fire protection in fossil-fuel steam electric generating plants	ACFD
NFPA 1961, Standard for Fire Hose	Specifications for fire hoses	ACFD
NFPA 1962, Standard for the Care, Maintenance, and Use of Fire Hose Including Connections and Nozzles	Requirements for care, maintenance, and use of fire hoses	ACFD
NFPA 1963, Standard for Screw Threads and Gaskets for Fire Hose Connections	Specifications for fire hose connections	ACFD
ANSI, B31.2, Fuel Gas Piping	Specifications and requirements for fuel gas piping	N/A

5.17.4 Agencies and Agency Contacts

Several agencies are involved to ensure protection of worker health and safety. Agency contacts relative to worker health and safety and fire are shown in Table 5.17-6.

Table 5.17-6. Agency Contacts for Worker Health and Safety

Issue	Agency	Applicability
Alameda County CUPA	Alameda County Environmental Health Department, Hazardous Materials Division 1131 Harbor Bay Parkway Alameda, CA 94502 Arthur Surdilla 510-567-6702	Hazardous materials compliance
Fire Response	Alameda County Fire Department 6363 Clark Ave, Dublin, CA 94568 Rotating contacts (24/7) Fire Chief William McDonald 510-632-3473	Fire protection compliance

Issue	Agency	Applicability
Worker Health and Safety	Cal/OSHA, Modesto District Office 4206 Technology Drive, Ste. 3 Modesto, California 95356 Eddie Miranda 209-545-7310 DOSHMOD@dir.ca.gov	Incident reporting

5.17.5 Permits and Permit Schedule

Table 5.17-7 lists applicable permits related to the protection of worker health and safety for Project certification. The activities covered and application requirements to obtain each permit are provided.

All permits noted in Table 5.17-7 may be obtained from any Cal/OSHA district or field office as needed. Notification requirements are listed as 24 hours because the permits may be required at several points in the construction of the plant or during operations; no specific permitting schedule is provided.

Table 5.17-7. Permits and Permit Schedule for Worker Health and Safety

Permit	Agency Contact	Schedule
Trenching and excavation and erection or demolition permit	Any Cal/OSHA district or field office	Submit completed permit application to any Cal/OSHA district or field office prior to commencing construction
Permit to erect a fixed tower crane	Any Cal/OSHA district or field office	Submit completed permit application to any Cal/OSHA district or field office at least 24 hours prior to initiation of activity

5.17.6 References

California Energy Commission. July 2021. California Code of Regulations, Title 20. Public Utilities and Energy, Division 2. State Energy Resources Conservation and Development Commission. Available: https://www.energy.ca.gov/sites/default/files/2021-07/Title%2020%20Updated%20July%2023%2C%202021.pdf.

6. Alternatives

The California Environmental Quality Act (CEQA) requires consideration of "a range of reasonable alternatives to the project, or to the location of the project, that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives" (Title 14, California Code of Regulations [CCR]15126.6[a]).

Thus, the focus of an alternatives analysis is on alternatives that "could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects" (14 CCR 15126.6[c]). The CEQA Guidelines further provide that "among the factors that may be used to eliminate alternatives from detailed consideration in an environmental impact report are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts."

The Energy Facilities Siting Regulations (Title 20, CCR, Appendix B) guidelines titled *Information Requirements for an Application* require the following:

> A discussion of the range of reasonable alternatives to the project, including the no project alternative… which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and an evaluation of the comparative merits of the alternatives.

The data adequacy regulations also require the following:

> A discussion of the applicant's site selection criteria, any alternative sites considered for the project and the reasons why the applicant chose the proposed site.

A range of reasonable alternatives are identified and evaluated in this section, including the "no project" alternative (that is, not developing a new power generation facility), alternative site locations for constructing and operating the Viracocha Hill Battery Energy Storage System Project (Viracocha Hill BESS or Project), alternative Project design features (including linear route), and various technology alternatives. This section also describes the site selection criteria used in determining the proposed location.

6.1 Project Objectives

1. The primary purpose of the Project is to assist the State of California (State) in meeting the goal of all electricity in California to come from renewable and zero carbon resources by 2045 as required under Senate Bill 100 (2018). To achieve this goal, new power supplies and power storage are needed. The Project would help balance electricity generation from all sources, including, but not limited to, wind and solar, with electricity demand by storing excess generation from all power sources and delivering back to the grid when demand exceeds real-time generation supply. The Project displaces the need for additional fossil fuel-based generating stations to serve peak demand periods when renewable sources may be inadequate or unavailable. The Project objectives are as follows: Construct and operate a 362.8-Megawatt-hour (MW-hr), 90.7-MW (at the POI) BESS facility to support the State's energy goals.

2. Develop a BESS facility that minimizes significant environmental impacts of project development through the use of existing infrastructure, existing real property interests and rights-of-way, project design measures, and feasible mitigation measures.

3. Develop a BESS facility close to a utility grid-connected substation with existing capacity or available space nearby for interconnection.
4. Develop an eligible energy storage facility that can assist community choice aggregators, investor-owned utilities, and publicly owned utilities in meeting their California Renewables Portfolio Standard (RPS) requirements.
5. Develop a Community Benefits Plan (CBP) that ensures the proposed Project benefits the local community and contributes to a clean and equitable economy for construction materials.
6. Create new, high-paying construction jobs and skilled trades and professional roles in Alameda County.

6.2 The “No Project” Alternative

If the Project were not constructed, basic project objectives would not be met, and the State’s RPS goals and policy benefits would not be realized. The proposed Project’s storage capacity provides electrical system stability, enhancing grid stability and allowing for further integration of intermittent renewable resources. The proposed Project provides the State with an additional means for achieving the RPS mandate.

The no project alternative could result in greater fossil fuel consumption, air pollution, and other environmental impacts in the State as older, less efficient plants with higher air emissions would continue to generate power instead of being replaced with intermittent renewable technologies. An energy storage project provides energy during peak demand periods, regardless of ambient and seasonal conditions, facilitating the addition of intermittent resources, while avoiding the impacts associated with fossil fuel facilities. Because the no project alternative would not satisfy any of the basic project objectives, it was rejected in favor of the proposed Project.

6.3 Power Plant Site Alternatives

The Project requires approximately 17 acres to support construction and operation, within close proximity to a utility grid-connected substation. The Applicant reviewed four sites in the Project area (the proposed site and three alternative sites). Figure 6-1 presents the proposed and alternative sites. All the sites are within the Altamont Pass area, with Alternative Site 1 located due east of the proposed site and south of the Bethany Reservoir. Alternate Site 2 is located southeast of the proposed site, adjacent to a gravel roadway. Alternative Site 3 is located south of Altamont Pass Road and Interstate 580. All the sites in general meet the Project objectives. The following is a description of each of the proposed sites.

6.3.1 Proposed Site

The proposed site is an approximately 17-acre parcel located on grazing land within an existing wind farm development. The site ranges in elevation from 405 to 450 feet above sea level. The site is located within 1,325 feet of the Ralph Substation, meeting the requirements of Project Objective 3. The site does not have mapped waters of the United States or the State. (A full analysis of biological resources will be provided in Section 5.2, Biological Resources, at a future date.)

6.3.2 Alternative Site 1

Alternative Site 1 is an approximately 11-acre parcel located on grazing land adjacent to an existing wind farm development. The site ranges in elevation from 270 to 345 feet above sea level. The site is located within 4,000 feet of the Ralph Substation, meeting the requirements of Project Objective 3. The site does not have mapped waters of the United States or the State. (A complete analysis of biological resources will be provided in Section 5.2, Biological Resources).

6.3.3 Alternative Site 2

Alternative Site 2 is an approximately 14-acre parcel located on grazing land adjacent to an existing wind farm development. The site ranges in elevation from 390 to 450 feet above sea level. The site is located within 3,000 feet of the Ralph Substation, meeting the requirements of Project Objective 3. The site is not located in critical biological resources habitat but is adjacent to mapped waters of the United States or State along the southeastern boundary. (A complete analysis of biological resources will be provided in Section 5.2, Biological Resources).

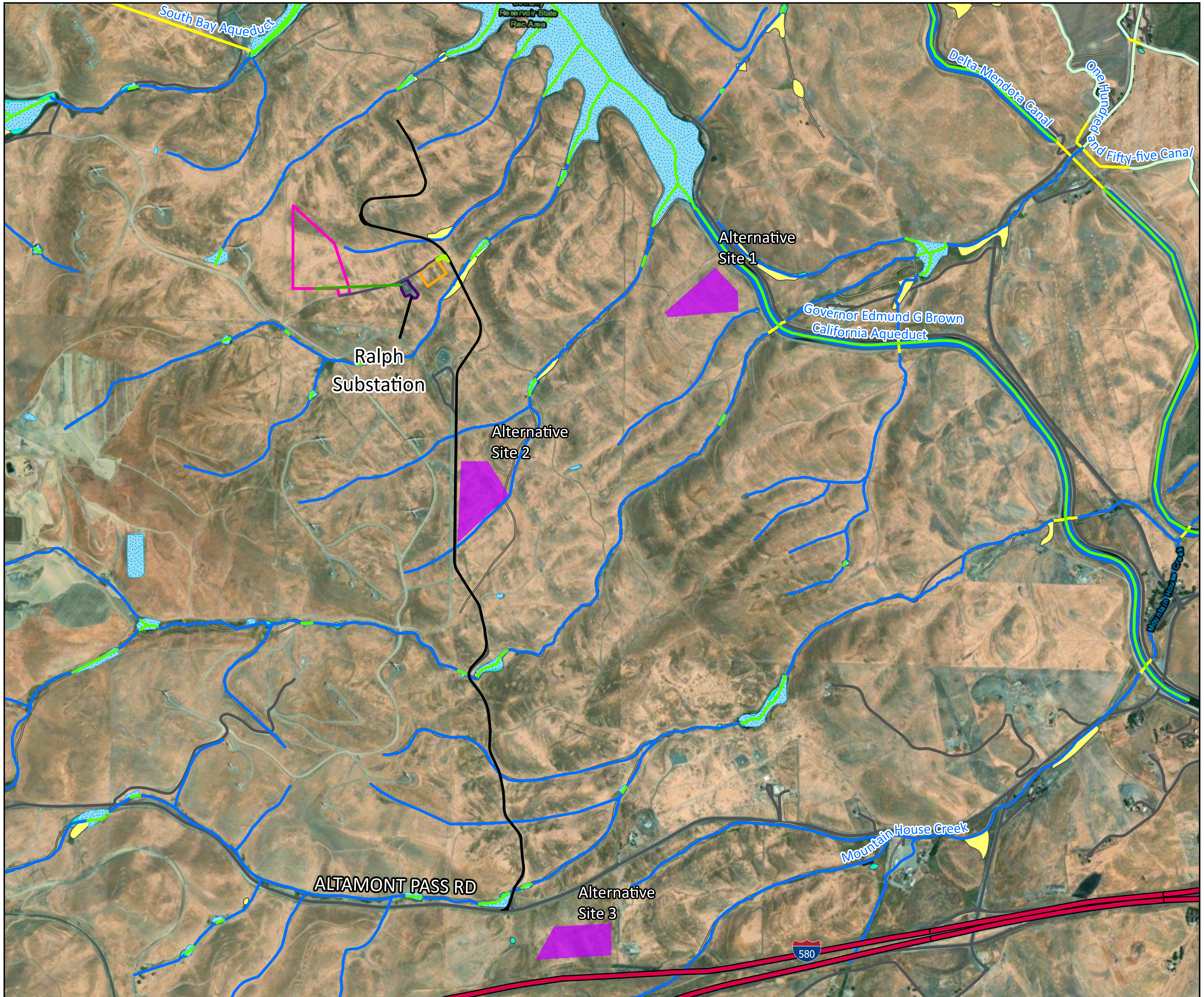
6.3.4 Alternative Site 3

Alternative Site 3 is an approximately 12-acre parcel located on grazing land. It is a sloped parcel ranging from 475 feet to 500 feet above sea level. The site is located approximately 2 miles south of the Ralph Substation. The site is unlikely to have mapped waters of the United States or the State on the parcel. (A complete analysis of biological resources will be provided in Section 5.2, Biological Resources).

6.3.5 Discussion

The proposed Project site, and the alternative sites all meet most of the Project objectives. All the sites will likely have very similar environmental impacts. However, the alternative sites will likely have slightly more environmental impacts because of the need for a longer generation tie line and the associated construction and operational impacts (primarily avian collision). Additionally, Alternative Site 2 has the potential of mapped waters along its southeastern boundary, which could translate into potential aquatic resources impacts.

Alternative Site 3 will likely have slightly lower construction air quality impacts because of the reduced need for travel on unpaved roads. However, this site will be directly visible to drivers on both Altamont Pass Road and Interstate 580, resulting in higher expected visual resource impacts.



Legend

- Proposed 230-kV Gen-Tie
- Proposed Access Road Widening Area
- Proposed Improvements to Existing Access Road
- Proposed Alternate Substation Area
- Ralph Substation
- Proposed Viracocha BESS Equipment Yard
- Wind Farm Road (No Improvements)
- Alternative BESS Location
- Interstate
- Road

NHD Flowline

- Canal/Ditch
- Pipeline
- Stream/River
- Artificial Path
- NHD Waterbody

NWI Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

Source:
1) ESRI Aerial Images

N

0 0.5 1
Miles

Figure 6-1
Alternative Sites Considered
Viracocha Hill BESS Project
Alameda County, California

Jacobs

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6.4 Technology Alternatives

6.4.1 Generation Technology Alternatives

Alternative technologies were reviewed and evaluated against the Project. Factors such as Project footprint, efficiency, response time, duration of storage, cost, and potential environmental impacts were considered. The advantages and disadvantages of each were studied. Ultimately, the other alternatives were rejected from further analysis either because they did not meet the Project's purpose, or they would result in greater impacts than the Project's technology. A summary of the alternative technologies considered and rejected is provided in the following sections.

6.4.1.1 Fossil Fuel

A fossil fuel power plant burns fuel sources such as coal, oil, or natural gas to produce electricity. The fuel sources that undergo conversion must first be trucked-in or delivered to the power plant using components such as subterranean gas lines. The thermal conversion process emits into the atmosphere significant amounts of greenhouse gas (GHG), which is a major contributor to global warming and inconsistent with the Project objectives. As such, this alternative was rejected in favor of the battery storage technology.

6.4.1.2 Nuclear

A nuclear power plant is another type of thermal power plant that typically uses heat to generate steam, in turn causing a generator to produce electricity. Nuclear power plants are recognized as significant providers of low-carbon energy; however, there are numerous issues that pose threats to people and the environment. Threats include health risks and environmental damage associated with the production, storage, and potential release of radioactive waste. Building a nuclear power plant is a complex and lengthy process, with significant up-front financial costs. As there are potential significant risks and impacts associated with this type of development, a nuclear power plant is rejected as a viable alternative to the Project.

6.4.1.3 Renewable Power

The Applicant considered development of a wind or solar farm on the 17-acre site. However, wind and solar projects would substantially increase aesthetic impacts because of the increased height of the wind turbines or substantial grading that would be required for installation of the solar panels. In addition, development of a wind farm would potentially result in greater impacts on avian species when compared to the Project. It is assumed that the 14-acre site would be insufficient in size to develop adequately sized facilities that would meet the Project objectives. As such, this alternative was rejected in favor of the proposed Project.

6.4.1.4 Compressed Air Energy Storage (CAES)

Energy is stored in the form of compressed air using an air compressor, storage vessel, and power generator. Energy is returned to the grid by releasing the compressed air, which drives a generator to produce electricity. Although CAES can store larger amounts of energy than a BESS, they require suitable geological conditions and larger physical space for air storage. Additionally, the system requires heat to efficiently use compressed air to drive the generator. As such, this alternative was rejected in favor of the proposed Project.

6.4.1.5 Thermal Energy Storage

In this technology, heat energy is captured and released to generate electricity. Materials such as molten salts, phase-change materials, rock, or water absorb and store heat energy, and return stored energy when they cool. These systems are not as efficient as BESS because they may experience energy loss because of the nature of heat dissipation. This technology also has a slow response time. This technology also requires a larger footprint compared to BESS sites. As such, this alternative was rejected in favor of the proposed Project.

6.4.1.6 Supercapacitors

Supercapacitors store and release electrical energy by electrostatically adsorbing ions on the surface of electrodes. Supercapacitors have a faster response time and a longer life cycle than batteries. However, they are less suitable for long-term energy storage because they have a lower energy density and lower energy efficiency because of higher self-discharge rates and other losses (Castro-Gutierrez et al. 2020; Mughees 2021). This technology is best suited to applications where frequent charge-discharge cycles or rapid energy delivery is required. As such, this alternative was rejected in favor of the proposed Project.

6.4.1.7 Hydrogen Storage

Surplus electricity is turned into hydrogen through electrolysis, where the generated hydrogen is compressed and stored in tanks at high pressure or liquified, and then later combined with oxygen to produce electricity. This system can store large amounts of energy but is not efficient because a lot of energy lost during the conversion and the process of electrolysis. This technology also has a slower response rate than BESS. There are also safety risks involved with this type of energy storage because of the low density and high reactivity of hydrogen. As such, this alternative was rejected in favor of the proposed Project.

6.4.2 Conclusions

The preceding analysis demonstrates that the no project alternative does not meet the basic Project objectives. Furthermore, the alternative project sites examined were not environmentally superior to the proposed Project site. Finally, alternative generating technologies were determined to not meet the basic Project objectives nor result in environmentally superior results.